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ABSTRACT

This publication contains 25 papers from a conference on defining quality higher education. Opening sections cover the conference program and members of the conference's steering committee. A representative sampling of papers includes the following: "The College Student Experiences Questionnaire: A Follow-Up Study of Academic and Social Skills Development" (Karen Bauer); "Variations in the Personal Goals of College Freshmen and in the Goals of Different Freshman Classes" (David Brodigan and Larry Litten); "Risky Practices, Gender and Power: A Study of Heterosexual College Students" (Jennifer A. Brown); "A Financial-Risk Indicator Model: The Ability to Predict Attrition and the Ability to Pay" (David J. Costello); "Validity of Admission Characteristics in Predicting Performance in Academic Coursework" (Anne M. Delaney); "Integrating Strategic Planning and Facilities Planning in a Comprehensive Public University" (Louis Fabian); "High School Graduates: What Do You Do With the Data" (Katherine Holsworth and John Jacobsen); "College Women's Performance in a Math-Science Curriculum: A Case Study" (Elizabeth Johnson); "A Comparison of Influences on Grading Practices of Faculty at Two-Year and Four-Year Institutions" (Thomas P. Judd); "Predictors of Retention for Community College Students: Student and Program Characteristics" (Kathleen Keenan); "Tracking Student Transfers: The Perils and Pitfalls of Complying with the New Student Right-To-Know Act (PL 101-542)" (Marcia Lee); "Developing A Comprehensive Data Base for Assessing Faculty Productivity" (Michael Middaugh); "Exploring College Environment and Affective Change" (Eva Nance); "Inputs and Environment: Keys to College Outcomes" (Joseph Pettit); "Completers' Perspectives of Their Higher Education Experiences" (Rocco Russo and Kathleen Doran-Norton); "Marketing and Development: Implementing Bachelor Degree Program at a Two-Year Institution" (Suzanne Szydlik and David Costello); "New Standards for Accreditation: Implications for Institutional Research" (Dawn Terkla); "How Valid is Self-Reported Financial Aid Information?" (Dale Trusheim); "Differences and Similarities Between Native and Transfer Students: CSU Surveys of the Class of 1990" (Dawne Vogt); and "School Visits--Still an

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Effective Marketing Tool?" (David Weir). Later sections list North East Association for Institutional Research members and offer a subject index. Each paper includes references. (JB)

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ED 406 869

North East Association for Institutional Research
19th Annual Conference
Proceedings

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NEAIR

HE 026 312

Defining a Quality Education

The Hotel Washington • Washington, D.C. • November 14-17, 1992

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Defining A Quality Education

President's Message

The 19th Annual Conference of the North East Association for Institutional Research, held November 14-17, 1992, at the Hotel Washington in Washington, DC, will undoubtedly be remembered both for its location and the depth and breadth of its program. While this is the most southern location to date for an NEAIR conference, I personally will remember it as the workshop conference. From an assessment primer to advanced statistics to TQM, the range of in-depth workshop opportunities was the most extensive I've experienced in my association with NEAIR. The credit for the success of this conference goes first to the presenters and program participants whose contributed papers, panel discussions, demonstrations, workshares and workshops provided the substance.

The conference theme, "Defining a Quality Education," precipitated discussions of the roles of the IR profession, of public agencies and associations, and of self-appointed third-party for-profit raters. The Monday morning keynote address by Clifford Adelman, Director of the U.S. Department of Education's Division of Higher Education, Office of Research, examined strategic transformational roles for IR professionals in responding to renewed demands for quality improvements through standardized assessment and the public dissemination of results. From theoretical assessment constructs to practical applications and techniques, from philosophical debates on the nature of quality to regulatory requirements, the papers and panel discussions of this conference examined the full spectrum of "quality" issues confronting higher education today.

Special thanks and credit are due the excellent organization and planning of Ellen Kanarek, Program Chair, and Stuart Rich, Chair for Local Arrangements. Ellen and Stuart set out to host a conference that would address contemporary issues, provide in-depth examination and study, and foster the collegial networking opportunities so important to us all. The Sunday evening dinner at The Old Ebbitt Grill proved an elegant and relaxed opportunity to make new friends and reestablish old acquaintances. We, the membership, are the direct beneficiaries of much hard work and untold volunteer hours of planning by these two individuals necessary to assure the success of this conference.

Thanks as well to Jane Price for her work in the compilation, editing and production of these Proceedings. And of course, thank you from all the membership to each and every paper contributor. Without your efforts and your willingness to share there could be no conference and no Proceedings.

Congratulations to Mike McGuire on his election to the position of President-Elect, to Wendell Lorang, on his election to Treasurer, and to Karen Bauer, Jim Fergerson, and Jim Ritchie on their election to the Steering Committee. Mike is an experienced IR professional and past Program Chair with eye to the future. The membership can be proud of its selection of these officers and steering committee members who are sure to serve the organization well in the years ahead.

Finally, a very special and sincere thank you to Mike Middaugh for his continued advice and guidance throughout these last two years. We are all much indebted to Mike for his exceptional dedication and service to the organization. Best wishes to Dawn Terkla, who like Mike Middaugh has been a most valued confidante this past year, and who as NEAIR's new President for '93 is proceeding, along with Marjorie Wiseman (program chair) and Diane Cuneo (local arrangements chair), with planning for the Fall '93 Annual Conference to be held at the Hotel Sagamore in Lake George, New York.

It is not possible here to acknowledge by name the many, many individuals who helped with program, arrangements, presentations, and publications. But it is the efforts of these willing volunteers that make NEAIR the special organization that it is. Please accept my heartfelt thanks to all of you for your confidence and cooperation. As I've said before, given the troubled times we face in higher education today, it is a great comfort to know there exists a friendly network of professionals just a phone call or BITNET message away, ready to listen and advise.

To you, the membership of NEAIR, with acknowledgment to all who worked so diligently to make our 19th Annual Conference a success, I commend these Proceedings.

Larry W. Metzger
President NEAIR, 1992

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1. At the request of Clifford Adelman, his keynote address entitled "Judgments in the Window: Standards of Content and Standards of Performance" has not been included in the Proceedings as it will be published in a national journal in the near future.

2. Selected panel presentations have been included in the Proceedings as an additional service to NEAIR members.

* David Weir's paper was presented at the 1991 NEAIR Conference and appears in print for the first time in the 1992 Proceedings.

Conference Program

Saturday November 14

Newcomers to Institutional Research

Michael F. Middaugh
Director of Institutional Research & Planning
University of Delaware

12:30pm - 5:30pm
Workshop
Council

This workshop is designed to give new practitioners in institutional research a hands-on approach to getting started in the field. Using the NEAIR Monograph for Newcomers to Institutional Research, workshop participants will walk through a series of exercises designed to address such issues as: How to ensure data integrity; developing factbooks and reports that are used by college presidents; defining critical issues for institutional research at your college; identifying sources of data; conducting survey research; using personal computers and software in institutional research; and developing forecasting models. The workshop will also address the political pitfalls in institutional research and will discuss how the new practitioner can effectively link his/her office with the strategic planning/decision-making center at their institution.

Advanced Statistical Analysis in Institutional Research Using SPSS/PC+

Marian Pagano
Director of Institutional Research & Planning
Columbia University

MaryAnn Coughlin
Research Analyst
Smith College

12:45pm - 5:15pm
Workshop
Georgetown University

This is a joint theory, application, and execution workshop. It will cover many of the advanced statistics in the SPSS/PC+ package. Participants should be comfortable with basic statistics and SPSS commands. This case study workshop will walk participants through the application and interpretation of SPSS advanced statistics to common institutional research tasks, such as cluster analysis, factor analysis, analysis of variance, and multiple regression. Participants are encouraged to submit requests for coverage of other topics. Such requests should be made well in advance of the workshop.

Meet at Registration Desk for van transportation.

Total Quality Management in Higher Education

G. Gregory Lozier
Exec. Director, Planning & Analysis
Pennsylvania State University

Deborah J. Teeter
Director, Institutional Research & Planning
University of Kansas

1:00pm - 5:00pm
Workshop
Capital

This workshop is designed as an introduction to individuals interested in examining such questions as "What is TQM?" "Who is practicing it?" and "What are some of the issues in getting started?" The presenters will describe the basic principles, underlying concepts, and origins of Total Quality Management, and introduce concrete examples of experiences with TQM.

5:30pm - 7:00pm **Early Arrivals Reception - President's Suite**

Sunday November 15

9:00am - 5:30pm **Registration - Hotel Lobby**

Institutional Planning: Principles and Applications

John A. Dunn, Jr.
President
Dean Junior College

9:00am - 12:00noon
Workshop
Caucus

Institutional researchers are often called on to support or manage planning processes. Textbook approaches often ignore real institutional differences. Attendees will be asked to describe the central planning question(s) and constraints at their institutions; we will then focus on underlying principles and their application to these situations. Participants will receive copies of the SCUP Guide for New Planners and other materials.

Principles of Financial Management and Analysis for Institutional Researchers — I

James P. Honan
Associate Director
Programs and Professional Education
Harvard University

9:00am - 12:00noon
Workshop
Council

This workshop is designed for individuals with little or no knowledge of nonprofit financial management and accounting terms, concepts, and analytic techniques. It will provide institutional research professionals with a broad understanding of the development and use of financial information in colleges and universities. Among the topics which will be discussed are fund accounting, chart of accounts, basis of accounting, preparation and interpretation of financial statements, ratio analysis, and budgeting formats. Selected readings, a specific case study on financial management and analysis in higher education, and a glossary of terms in nonprofit financial management will be utilized. The workshop will not attempt to produce accountants or budget officers. It is intended to improve management and analytic skills by making participants better consumers of financial data.

Introductory Statistics for Institutional Research

Marian Pagano
Director of Institutional Research
Columbia University

9:00am - 12:00noon
Workshop
Capital

The very basic ideas in statistics will be covered in a way useful as an introduction or as a refresher to statistics. Data from an actual IR project will be used for illustration. Descriptive statistics, sampling and probability theory (including the famous M & M exercise), and three inferential methods (chi square, t-test, and Pearson's r) will be covered. Participants will receive a notebook detailing the materials covered.

An Assessment Primer

Barbara Wright
University of Connecticut
Former Director
AAHE Assessment Forum

9:00am - 12:00noon
Workshop
Federal

An introduction to the postsecondary assessment movement, including history, concepts, methods, controversies, and trends, along with basic steps for getting started.

Public Universities Information Exchange

Edward L. Delaney
Executive Director
National Center for Strategic Information Exchange
George Mason University

Michael F. Middaugh
Director of Institutional Research
University of Delaware

Donald J. Reichard
Associate Vice Chancellor
UNC-Greensboro

1:00pm - 4:00pm
Seminar
Federal

The Exchange is a consortium of public universities committed to sharing strategic information and knowledge designed to support planning and management effectiveness among member institutions. This session for current members and potential new members interested in joining the consortium will focus on an update of the relocation of the Exchange to George Mason University and the studies to be undertaken during the year ahead.

Introduction to SPSS/PC+ for Institutional Research

Marian Pagano
Director of Institutional Research & Planning
Columbia University

MaryAnn Coughlin
Research Analyst
Smith College

1:15pm - 4:45pm
Workshop
Georgetown University

This workshop is intended for those who are familiar with basic statistical concepts and applications but who want to learn how to efficiently use SPSS/PC+ to get appropriate output. The workshop will cover: 1) SPSS file types (.sys, .lis, .log, .pad); 2) basic statistical procedures and interpretation: frequency distributions, means, crosstabs, correlation, t-test and simple regression; 3) manipulating data and files: join, sort, recode, compute, if; and 4) basic reporting using report and tables. This is an immersion-type workshop using real IR data.

Meet at Registration Desk for van transportation.

1:30pm - 4:30pm

Principles of Financial Management & Analysis for Institutional Researchers - Advanced Session

James P. Honan
Associate Director
Programs & Professional Education
Harvard University

1:30pm - 4:30pm
Workshop
Council

This workshop will focus on issues relating to cost containment and retrenchment in colleges and universities. Using a case study and supplementary readings, the session will highlight the possible role of institutional researchers in the collection and analysis of financial and non-financial data to support and inform cutback management decisions and strategic planning.

Assessing and Improving General Education: A Strategy Based on Coursework

Elizabeth A. Jones
Research Associate, NCTLA,
Pennsylvania State University

James Ratcliff
Co-Director, NCTLA
Pennsylvania State University

1:30pm - 4:30pm
Workshop
Capital

In this workshop, participants learn how to select multiple methods to assess student learning; link learning to coursework through transcript analysis; and use this information to improve curriculum, instruction, and learning. Participants receive a copy of the Handbook on Linking Assessment and General Education.

3:00pm - 3:15pm **Break - Mezzanine**

4:45pm - 5:45pm **Table Topics - Parkview**

Catholic Colleges and Universities

Joseph Pettit
Vice President for Planning
Georgetown University

4:45pm - 5:45pm
Special Interest Group
Caucus

Representatives of Catholic colleges and universities are invited to share experiences and common concerns and to plan activities of mutual benefit.

Requirements and Implementation of the Student Right-to-Know Act

Barbara Erdsneker
Senior Research Associate
Institutional Research
Bergen Community College

The Student Right-to-Know and Campus Security Act specifies, in part, July 1993 reporting of student graduation, persistence, and for many colleges, transfer rates. This session will focus on the details of the Act, as well as methods of collection of the data required for compliance.

Impact of Campus-Wide Access to Centralized Information Systems

Thomas Gusler
Assistant Academic Vice President
Clarion University of Pennsylvania

Participants in this session will discuss the potential impact on the institutional research function of making Campus-Wide-Information-Systems (CWISs) and fourth-generation language packages e.g., Focus) available to faculty and administrators who might not be completely informed of all the qualifications of the data.

How Institutional Researchers Can Enhance the Admission Process at Various Stages

Anne Marie Delaney
Director of Program Research
Boston College

Dawn Geronimo Terkla
Director of Institutional Research & Planning
Tufts University

Marjorie Wiseman
Director
Marketing, Institutional Research & Planning
Northeastern University

This discussion will focus on how institutional researchers can enhance the ability of admission officers to achieve their recruitment goals. The discussion will identify specific studies institutional researchers can conduct and explore ways in which institutional researchers can interpret the results of such studies to increase admission officers' understanding of the college age population and to enhance their ability to attract ideal candidates to their institutions.

Using SPSS in the IR Office

Dale W. Trusheim
Associate Director
Institutional Research & Planning
University of Delaware

This table topic session is for both new and experienced SPSS users — mainframes or PC. Come prepared to share or discuss problems, solutions, questions, interesting code, or data analysis.

Assessment: Where are We Headed?

Barbara Wright
University of Connecticut
Former Director
AAHE Assessment Forum

'Authentic assessment,' quality indicators, TQM...What do they mean, and where is postsecondary assessment headed? How can institutions — and institutional researchers — best respond to calls for greater institutional effectiveness? Join this discussion to share impressions and pool ideas.

6:00pm - 7:00pm **Cash bar and hors d'oeuvres - The Old Ebbitt Grill**

7:00pm - 9:00pm **Dinner and "networking" - The Old Ebbitt Grill**

Monday November 16

7:30am - 8:45am **Continental Breakfast - Ballroom**

7:45am - 8:45am **Special Interest Groups**

Pennsylvania State System of Higher Education

Maree R. Glanville
Director
Institutional Research
Shippensburg University

Capital

Institutional researchers from the State System in Pennsylvania will meet to discuss current issues and concerns.

Public Universities Information Exchange

Edward L. Delaney
Executive Director
National Center for Strategic Information Exchange
George Mason University

Federal

An opportunity for members of the Exchange and others interested in data exchange activities in public institutions to discuss current plans, with a focus on studies of institutional productivity, staffing, and cost reduction.

Two-Year Colleges

Alan J. Sturtz
Director
Institutional Research
South Central Community College

Council

This SIG is intended for individuals dealing or concerned with the IR function in two-year institutions. Problems, concerns, and issues will be discussed in an informal setting. A representative of the National Council for Research and Planning will brief participants on NCRP plans for 1992-93.

Higher Education Data-Sharing Consortium (HEDS)

Kimberly Dolphin
Director
HEDS Consortium

Parkview

An opportunity for HEDS members and others interested in data exchange activities to discuss current plans and future areas of analysis, with a focus on institutional productivity and cost containment issues.

9:00am - 10:00am

General Session - Ballroom

Judgments In The Window: Standards of Content and Standards of Performance

Clifford Adelman
Director, Division of Higher Education, Office of Research
U.S. Department of Education

10:15am - 10:55am

Transforming Higher Education Through Continual Quality Improvement:Implications for the Institutional Research Profession and Associations

Edward L.Delaney
AIR President

Larry W. Metzger
NEAIR President

John Muffo
AIR Vice President/President-Elect

Terrence Russell
AIR Executive Director

Dawn Geronimo Terkla
NEAIR President-Elect

10:15am - 11:50am
Panel
Parkview

Renewed demands for quality improvement by federal, state, and accrediting agencies, together with increased student and sponsor expectations for quality products and services, have increased the challenges for higher education to transform its functions and culture. Institutional research professionals are likely to be called upon to play significant roles in these tranformational processes, especially involving assessment and quality improvement efforts. This panel will seek ways in which AIR, NEAIR, and other associated groups might advance these transformational efforts and empower institutional researchers to become strategic players.

Evolution of a Special Needs Student Reporting System

Stephen Cunningham
Institutional Research Specialist
Office of Strategic Planning & Research
Pennsylvania College of Technology

10:15am - 10:55am
Topical Case Study
Caucus

The development of a computer database and reporting system used for Perkins Act reporting requirements and other internal needs at a public, two-year technical college will be discussed.

Moderator: Barbara Erdsneker
Bergen Community College

Using CIRP Data to Classify Students and Institutions

Larry Litten
Director of Research, COFHE
David Brodigan
Assoc. Dean, Institutional Research
Carleton College

10:15am - 10:55am

Paper
Federal

Factor analysis of the data on goals and values from the American Freshmen Survey obtained at 18 private, selective colleges and universities revealed seven principal dimensions. This paper will explore a typology of students based on these factors and the personal characteristics that are associated with membership in the different groups. It will also examine the characteristics of institutions which have relatively high or low scores on each of the dimensions.

Moderator: Lynn Rothstein
Union Theological Seminary

High School Graduates: What Do You Do with the Data?

John Jacobsen
Data and Information Manager
Office of Academic Affairs
Pennsylvania State System of Higher Education

Katharine Blake Holsworth
Senior Budget Planning Analyst
Pennsylvania State University

10:15am - 10:55am

Paper
Capital

Two separate agencies find similar and very different uses for high school graduate data from the Pennsylvania Department of Education. How each entity uses the data will be discussed, including but not limited to projections and other uses of the data. Also being discussed will be other activities that might be of use to the universities and the high schools that send their students to either Penn State or the State System Universities.

Moderator: Walter Liss
Tufts University

Beyond IPEDS: The Use of National Data Bases in Institutional Research

Samuel S. Peng
Chief, Statistical Service and Methodological Research
National Center for Education Statistics

Roslyn Korb
Chief, Cross-Sectional Studies Branch, NCES

10:15am - 10:55am

Panel
Council

This panel will describe several national databases, other than IPEDS, that have rich information for institutional research. The presentation will map major research issues with these databases, highlight findings from previous studies, and discuss procedures for obtaining these data bases and technical assistance. Implications for institutional research will be discussed.

11:10am - 11:50am

Risky Practices, Gender & Power: A Study of Heterosexual College Students

Jennifer Brown
Director of Institutional Research
Connecticut State University

11:10am - 11:50am
Paper
Council

A report on risky practices in the sexual relationships of heterosexual, undergraduate college students, the effects of interpersonal power and gender on safer sex practices, and the implications of the findings for safer sex education.

Moderator: Kay Wijikumar
Indiana University of Pennsylvania

Quilting of Fragmented Data: A Multi-Dimensional Approach to Conducting Ad-Hoc Research

Yun K. Kim
Director
Office of Institutional Research
Goucher College

11:10am - 11:50am
Topical Case Study
Caucus

In the world of institutional research, many researchers are constantly asked (and required) to conduct studies which would require carefully controlled longitudinal approaches in a few weeks of time. How do we deal with this enormous dilemma? How do we ensure the quality of the results? This session will discuss a residential facility study recently conducted in a small private four-year college. The study integrated the results from a focus group study, a student opinion survey, campus visits, and a survey of admitted applicants. In addition, the presenter will share practical experience gained from conducting an in-house focus group study.

Moderator: Jane Price
Franklin and Marshall College

The College Student Experiences Questionnaire: A Follow-Up Study

Karen W. Bauer
Senior Research Analyst
Office of Institutional Research
University of Delaware

11:10am - 11:50am
Paper
Capital

The CSEQ was completed by 114 first-time freshmen in Spring, 1989 and again for a follow-up as seniors in Spring, 1992. This study explored differences in quality of effort, satisfaction with the University environment, and estimates of gains made as freshmen and seniors. Implications for policy and program change that can help define a quality education will be discussed.

Moderator: Brenda Bailey
Edinboro University of Pennsylvania

Validity of Admission Characteristics in Predicting Performance in Academic Coursework

Anne Marie Delaney
Director of Program Research
Boston College

11:10am - 11:50am
Paper
Federal

This paper presents the rationale, methodology, and results of a study designed to determine the predictive validity of principal admission characteristics in relation to performance in specific types of academic courses. The admission characteristics examined include Verbal and Mathematical SAT scores and High School Rank. In the context of this study, academic courses are classified both by level of difficulty, as 'More Challenging' and 'Less Challenging' and by content, as 'More Challenging Language Oriented' and 'More Challenging Quantitatively Oriented' courses.

Moderator: Harding Faulk
Cheyney University of Pennsylvania

12:00noon - 1:30pm

Annual Business Meeting and Luncheon - Ballroom

1:45pm - 2:25pm

Institutional and Association Research

Cecilia Ottinger
Assistant Director
Division of Policy Analysis & Research, ACE

Frank Balz
Executive Director
NIICU

Enid Jones
Director of Research, AACC

Meredith Ludwig
Director, Association Research
AASCU

Dale Trusheim
Associate Director
Institutional Research
University of Delaware

1:45pm - 3:20pm
Panel
Parkview

This panel will discuss the relationships and linkages between research done in and for higher education associations on the one hand, and institutional research on the campuses on the other.

Assessing County Support for Community Colleges: An Institutional Research Success Story

Craig A. Clagett
Director
Institutional Research & Analysis
Prince George's Community College

1:45pm - 2:25pm
Paper
Capital

This case study describes the origins and development of an analysis credited with partially defusing a delicate political situation and preventing a substantial cut in college revenue. In addition to presenting several measures for assessing relative county aid, the internal and external politics of sharing the information will be discussed. Suggestions for increasing the incidence of such success stories will be presented.

Moderator: Maree Glanville
Shippensburg University of Pennsylvania

Integrating Strategic and Facilities Planning in a Comprehensive Public University

Lou Fabian
Director, Planning & Evaluation
Academic Affairs
Lock Haven University of Pennsylvania

1:45pm - 2:25pm
Topical Case Study
Caucus

Although many institutions are engaged in formal planning activities, few have attempted to integrate academic and facilities planning. The advantages and challenges of linking these planning processes will be explored in this workshare session.

Moderator: Amy Ensminger
Mansfield University of Pennsylvania

A Financial-Risk Indicator Model: The Ability to Predict Attrition and the Ability to Pay

David J. Costello
Dean of Enrollment Planning
Newbury College

1:45pm - 2:25pm
Paper
Federal

The viability of a tuition-driven college is closely linked to the financial risks it takes with each entering class. At a relatively small institution (1,000 FTEs) a slight movement in the college's bad debt ratio can cost or benefit an institution dramatically. At an institution that has a rolling admissions process, it becomes more imperative that a financial risk indicator system be developed whereby the college can make a sound decision on whether or not to enroll a specific student. This report details how a financial risk indicator system can be developed and implemented.

Moderator: Katharine Blake Holsworth
Pennsylvania State University

2:40pm - 3:20pm

The Ten-Year Self-Study: Where Do I Begin?

Thomas Gusler
Assistant Academic Vice President
Clarion University of Pennsylvania

2:40pm - 3:20pm
Workshare
Caucus

This session will offer an opportunity for institutional researchers to share concerns, solutions, and practical planning advice with members regarding preparations for a ten-year self-study for the Middle States Association. Sample handouts will be available.

Moderator: George Force,
Slippery Rock University of Pennsylvania

CIRP Freshman Survey: Twenty-Year Trends at a Liberal Arts College

Indira Govindan
Director of Institutional Research
Connecticut College

2:40pm - 3:20pm
Paper
Federal

Connecticut College has participated in the CIRP Freshman survey for more than twenty years. In the first year it changed from a women's to a coed institution. This paper will examine trends in its students' educational aspirations, personal values, and political values as it made the transition from a single-sex to a coed college.

Moderator: John Jacobsen
Pennsylvania State System

Exploration of Some Rules for Comparative Analysis of Student Subgroups

Pam Roelfs
Associate Director
Institutional Research
University of Connecticut

2:40pm - 3:20pm
Paper
Council

How should institutional researchers analyze college effectiveness in educating and servicing a specific student subgroup? Research reports on student athletes vs. student nonathletes were reviewed to identify possible general guidelines for comparative analysis of student subgroups.

Moderator: Dawn Geronimo Terkla
Tufts University

Tracking Transfer Students: the Perils and Pitfalls of Complying with the Student Right to Know Act (PL101-542)

Marcia M. Lee
Director
Office of Institutional Research
Westchester Community College

2:40pm - 3:20pm
Paper
Capital

The purpose of this paper is to discuss the process used at Westchester Community College to identify students who transferred to four-year colleges before graduating and to provide a transfer student profile and back-up data suitable to satisfy auditors' verifying requirements for the Student Right-to-Know and Campus Security Act.

Moderator: William Freund
National Center for Education Statistics

3:20pm - 3:45pm **Break - Mezzanine**

3:45pm - 4:25pm

New Standards for Accreditation: Implications for Institutional Research

Dawn Geronimo Terkla
Director
Institutional Research & Planning
Tufts University

3:45pm - 4:25pm
Paper
Caucus

In January, 1992, the New England Association of Schools and Colleges issued new standards for accreditation. The objectives of this session are to describe the new standards, to highlight the differences between the new standards and the previous standards, and to discuss the implications that these new standards may have for institutional researchers.

Moderator: Phyllis Fitzpatrick
Fairfield University

Predictors of Retention for Community College Students: Student and Program Characteristics

Kathleen Keenan
Director, Institutional Research
Massasoit Community College

Joan Kinkiewicz
Research Assistant
Massasoit Community College

3:45pm - 4:25pm
Paper
Federal

This longitudinal study investigates factors related to retention and degree completion for students enrolled at a comprehensive community college. Associations between student and institutional variables are explored in the context of previous empirical research and theoretical models of student retention. Correlates of persisting students and high-retention programs are described, with discussion of strategy implications for program improvement and enhanced retention of at-risk students.

Moderator: Thomas Judd
Rockland Community College

Completers' Perspectives of Their Higher Education Experiences

Rocco P. Russo
Director, AAU/AGS Project
University of Rochester

Kathleen Doran-Norton
Director
Enrollment Systems/Research
University of Rochester

3:45pm - 4:25pm
Paper
Council

Tough questions confront efforts to refocus and improve undergraduate education. "Consumer" perspectives of educational experiences have a prominent role in this change process. The Senior Review Project, consisting of interview and questionnaire data, was designed to obtain evaluative information from graduating seniors. Presented results highlight academic choice(s) and services issues.

Moderator: James Ritchie
University of Pittsburgh

How Valid is Self-Reported Financial Aid Information?

Dale W. Trusheim
Associate Director
Institutional Research & Planning
University of Delaware

3:45pm - 4:25pm
Paper
Parkview

This paper compares the accuracy of students' self-reported information about financial aid awards with actual data on the types and amounts of these awards. This study shows that students' self-reports do not correspond closely to actual data. The results provide evidence for how nonsampling errors may bias survey results.

Moderator: Joseph Ravelli
Rutgers University

Marketing and Development: Implementing Bachelor Degree Programs at a Two-Year Institution

Suzanne Szydlik
Research Associate
Newbury College

David J. Costello
Dean of Enrollment Planning
Newbury College

3:45pm - 4:25pm
Paper
Capital

Changing market demands, responding to the needs and wants of students, and defining new market niches are just three reasons why a two-year college would seek to offer students a bachelor degree option. This paper focuses attention on a two-year career-oriented college that seeks to offer four-year bachelor degree programs in the areas of Business Administration and Legal Studies. This decision was driven by the philosophy of the College yet was well grounded in institutional and market research.

Moderator: Michael McGuire
Franklin and Marshall College

4:40pm - 5:20pm

Getting at the Heart of the Matter: The Power of *Persuasion* in Institutional Research

Peter Tran
Research Associate
Analytical Services
Boston University

4:40pm - 5:20pm
Demonstration
Council

The pervasive use of charts and graphics in institutional research calls for a computer program that is easy to use, flexible, and versatile. *Persuasion*, voted recently by Macintosh users as 1992's best presentation graphics program, provides institutional researchers with just that kind of program.

Moderator: Richard Heck
Colgate University

Assessing College Outcomes Using the Astin I-E-O Model

Joseph Pettit
Vice President for Planning
Georgetown University

Eva E. Nance
Director of Institutional Research
University of Notre Dame

4:40pm - 5:20pm
Panel
Parkview

Alexander S. Astin has long argued that talent development using an input-environment-outcome model is the proper way to assess college outcomes. In 1991, Georgetown University and the University of Notre Dame used the Follow-up Survey of UCLA's Higher Education Research Institute (HERI) as a senior survey and, where possible, matched the responses of individual seniors with those given to the 1987 CIRP Freshman survey. This presentation will examine the results of the resulting data using multiple regression analysis and other statistical procedures to understand both the cognitive and affective changes that took place during college. This analysis will be of particular interest to other institutional researchers since HERI plans to replace the follow-up survey with a similar instrument called the College Student Survey which will allow other colleges and universities to conduct comparable studies.

Quality Education: A Comparison of Definitions

Beth Baxter
Public Relations Director
Mon Valley Renaissance
California University of PA

4:40pm - 5:20pm
Paper
Caucus

Achieving a consensus definition of quality education in the higher education community is diffcult at best, impossible at worst. One reason for this difficulty may be that various higher education institutions define quality education in very different ways. This presentation compares the way U.S. research universities, Class I and Class II institutions and a selected number of community colleges from across the United States define quality education. The results indicate a significant difference in how these two groups define the term in a variety of publications that address both internal and external audiences.

Moderator: Arthur Kramer
Passaic County College

Differences and Similarities Between Native and Transfer Students: CSU Survey of the Class of 1990

Dawne Vogt
Assistant to the Director of Institutional Research
Academic Affairs
Connecticut State University

4:40pm - 5:20pm
Paper
Capital

This study, conducted at a large, public, four-year institution, examines similarities and differences between native and transfer students on general characteristics, methods of financing education, assessments of programs and services, assessments of skills and abilities, and on current employment status.

Moderator: Marian Pagano
Columbia University

The Potential Impact of IR on the Quality of Student Life

John F. Biter
Chair, Institutional Research
St. Bonaventure University

Carol Wittmeyer
Assistant Professor of Education
St. Bonaventure University

Ann Preston
Assist. Professor of Communication
North Dakota State University

4:40pm - 5:20pm
Paper
Federal

The primary focus of this paper is to demonstrate that institutional research studies can have significant impacts on currently enrolled students. This project uses the results of three institutional research studies to develop proposals that departments can quickly implement to improve the quality of life of currently enrolled students.

Moderator: Michael Middaugh
University of Delaware

5:30pm - 7:30pm

Reception - Cash bar, hors d'oeuvres. Meet your party for dinner at one of Washington's many restaurants

Tuesday	November 17
6:30am - 7:30am	**Fun Run - Meet in the Hotel Lobby**
7:30am - 8:45am	**Continental Breakfast - Ballroom**
8:00am - 9:00am	**Table Topics - Ballroom**
Barron's! Peterson's! College Guides! UGH! The University of Connecticut's Process for Answering "All of the Above" **Donna Davis** Assistant to the Director Institutional Research University of Connecticut	Our office receives numerous questionnaires, surveys, and college guides to fill out, but has so little time. This topical case study will describe the process the University of Connecticut uses to complete many of these questionnaires. Handouts will be available. Solutions and suggestions will also be solicited.
ASQ/ASQ+ Interest Group **Ellen Armstrong Kanarek** Program Director Applied Educational Research, Inc.	This session represents an opportunity for those interested in the Admitted Student Questionnaire or Admitted Student Questionnaire Plus to discuss their experiences, have their questions answered, and learn what changes may be planned.
The Ups and Downs of Implementing Deming's Total Quality Management at a Private Institution **Yun K. Kim** Director Office of Institutional Research Goucher College	The presenter will focus on numerous ups and downs of implementing Deming's total quality management (TQM) philosophy at a small four-year liberal arts college. The presenter will share the steps the College employed to learn about TQM and discuss the processes involved in developing a workflow diagram of Room Setup Procedure for special events as an example of how to implement TQM at the lowest level. Different levels of an institutional research office's involvement in implementation of TQM will also be discussed.
State Agency Need for Data vs. Institutional Autonomy **Joseph Ravelli** Director of Academic Planning Rutgers University	State agencies need institutional data for public accountability. At the same time, colleges and universities must maintain academic autonomy and ensure the appropriate use of their data. Can we reconcile these frequently conflicting interests?

Table Topics (Continued)

The Role of Institutional Research in Program Review

Jane Zeff
Assistant Director
Planning, Research & Evaluation
William Paterson College

As state legislatures and the public continue to ask for accountability from institutions of higher education, the time is right to review some of our standard tools of assessment. Program review is one of those traditional tools colleges have at their disposal to systematically examine major programs and help "define a quality education." In this session, the types of computer-generated reports produced by this office for a program review information packet are shared and discussed. The information packet focuses on departmental components such as program enrollment, course history, faculty efforts, and student profiles.

Conference Evaluation

Diane Cuneo
Director, Institutional Research
Smith College

Invited interviews.

Conference Evaluation

Marjorie Wiseman
Director, Marketing,
Institutional Research & Planning
Northeastern University

Invited interviews.

9:15am - 9:55am

Integrated Postsecondary Education Data System (IPEDS): Changes for 1993

William H. Freund
Chief, Institutional Studies Branch
National Center for Education Statistics
U.S. Department of Education

Susan Broyles
Section Head
NCES

Kristin Keough
Director
Finance Survey
NCES

9:15am - 9:55am
Panel
Federal

In 1990, NCES initiated a process to improve the IPEDS survey forms and data collection process. Input was sought from the postsecondary community to improve coverage, quality and timeliness of the surveys. This presentation will focus on changes to the IPEDS universe definition and will give special attention to changes to the 1993 forms.

The Role and Impact of the Institutional Researcher in the Presidential Search Process

Robert M. Karp
Assistant Dean
Institutional Research & Records
North Country Community College

9:15am - 9:55am
Paper
Capital

This paper describes a case study on the role and impact an institutional researcher had in a presidential search process. Emphasis on the development and implementation of weighted rating scales, interviewing forms, mini-fact sheets, and related contributions to the process are provided and discussed.

Moderator: Jane Zeff
William Paterson College

A College-Wide Information System (CWIS) at SUNY Potsdam

Peter J. Hoyt
Coordinator for Institutional Research
State University of New York at Potsdam

9:15am - 9:55am
Topical Case Study
Caucus

SUNY Potsdam is evolving from a centralized computing environment to the client/server model of computing. Institutional Research is playing a leadership role in this trek to distributive computing. This case study explores issues of data security, integrity, and timeliness; appropriate formats for electronic information; and the necessary infrastructure to implement a college-wide information system.

Moderator: Lou Fabian
Lock Haven University of Pennsylvania

Institutional Research and Graduate Education: Developing Recruitment and Marketing Data

Lynn Rothstein
Director of Institutional Research
Union Theological Seminary

Mary Jean Whitelaw
Director of Data Management
The Carnegie Foundation for the Advancement of Teaching

9:15am - 9:55am
Paper
Parkview

Thirteen graduate theological schools developed an Entering Student Questionnaire — Fall '91. The presentation will discuss the process of this cooperative venture of a new constituency for institutional researchers, a format for presenting data to a varied institutional audience, recruitment and marketing data, the "longitudinal" project, and its Foundation grant support.

Moderator: Elizabeth Johnson
Massachusetts Institute of Technology

Getting a Handle on Faculty Workload

Herbert M. Turner, III
Research Analyst
Institutional Research & Planning
University of Delaware

Michael F. Middaugh
Director
Institutional Research & Planning
University of Delaware

9:15am - 9:55am
Topical Case Study
Council

Colleges and universities across the country are facing increasing pressure to produce data on their faculty's workload: the University of Delaware is no exception. The Office of Institutional Research was asked to develop a series of reports in response to this pressure. This study explores their design, development, and current use by the university's administrators.

Moderator: Timothy Walsh
Temple University

10:10am - 10:50am

U.S. News and World Report's Annual Best Colleges Study: Dimensions, Variables, Measures, and Weights

Michael D. McGuire
Director
Planning & Institutional Research
Franklin and Marshall College

Robert Morse
U.S. News and World Report

10:10am - 11:45am
Panel
Parkview

Recent efforts to analyze the "Best Colleges" methodology in critical but constructive ways have focused on four levels of that methodology: the "academic areas," or larger dimensions that define quality; the component variables that are used to quantify quality on those dimensions; the specific measurements and methods associated with each variable; and the weights assigned to the component variables and quality dimensions to produce a summary ranking. The goal of this panel is to review the current status of these four levels, and to discuss the adequacy of alternatives to the "Best Colleges" model. A special focus of the weighting system will include a discussion of sensitivity analyses conducted by U.S. News and a study of expert judgements conducted by Franklin and Marshall.

A Comparison of Influences on Grading Practices of Faculty at Two-Year and Four-Year Institutions

Thomas Judd
Director
Institutional Research
Rockland Community College

10:10am - 10:50am
Paper
Caucus

How comparable are grades between institutions? This study examines and compares the use of formal evaluation methods, the types of skills reflected in final grades, the sources influencing course objectives, and faculty attitudes toward grading at two-year and four-year institutions.

Moderator: Curtis Bauman
East Stroudsburg University of Pennsylvania

The National Study of Postsecondary Faculty: The How's, Why's and Wherefore's

Roslyn Korb
Chief
Cross-Sectional Studies Branch
National Center for Education Statistics

Sameer Abraham
Senior Survey Director
NORC

James Fairweather
Associate Professor
Pennsylvania State University

10:10am - 10:50am
Panel
Council

In the 1987-88 academic year, the National Center for Education Statistics conducted the National Study of Postsecondary Faculty (NSOPF), a comprehensive study of higher education instructional faculty. This presentation will focus on results from that study and provide some insights on the process and problems associated with undertaking a national data collection activity such as NSOPF.

Description, Application and Demonstration of the Higher Education Media Scan (HEMS) Reference System

Jeffrey E. Dutton
Director
Institutional Studies
State University of New York at Buffalo

Kathleen K. Bissonnette
Director
Institutional Analysis & Planning
West Virginia University

10:10am - 10:50am
Demonstration
Capital

HEMS, a computer-assisted retrieval system, is effective for tracking topic-specific articles, locating data for comparative analyses, identifying and monitoring emerging issues, organizing office resources, and improving your decision-support effectiveness. It provides access to articles in eight higher education publications including *The Chronicle*. Actual applications will be demonstrated.

Moderator: Thomas Gusler
Clarion University of Pennsylvania

11:05am - 11:45am

Getting to Know Your Freshman Class: A Pre-Orientation Survey

Dona L. Fountoukidis
Director
Planning, Research & Evaluation
William Paterson College

11:05am - 11:45am
Paper
Council

A survey to obtain information about students' background and concerns as they approach college was completed by more that 90% of the freshman class prior to orientatioin. Results of the survey were made available to orientation leaders and to faculty who teach freshman seminar courses. This paper describes the survey results and their use.

Moderator: Darryl Bullock
Mercy College

College Women's Performance in a Math-Science Curriculum: A Case Study

Elizabeth S. Johnson
Associate Director of Admissions
Massachusetts Institute of Technology

11:05am - 11:45am
Paper
Capital

Women at a university with a strong math/science curriculum had higher 4-year completion rates and equivalent grade-point averages within majors even though their SAT-Math scores were significantly lower than the men's at the time of entry. The data were consistent for two successive classes. The culture of the university is discussed.

Moderator: Mona-Rae Thompson
University of Maryland

Developing a Comprehensive Data Base for Assessing Academic Productivity

Michael F. Middaugh
Director
Institutional Research & Planning
University of Delaware

11:05am - 11:45am
Paper
Federal

In an era of scarce resources, it is essential that colleges and universities develop mechanisms for ascertaining that fiscal and human resources are being allocated in the most effective and efficient manner. Most institutions have baseline measures for assessing academic productivity, i.e., FTE majors, course enrollments, student credit hour generation, etc. This paper will describe how those baseline measures can be enhanced with detailed analysis, and can be augmented and strengthened with the addition of selected fiscal data elements. The result is a more richly textured explanation of academic productivity across departments within a college, and across colleges within a university.

Moderator: Clover Hall
Iona College

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An Information Infrastructure for Enrollment Management: Tracking and Understanding Your Students

Craig A. Clagett
Director
Institutional Research & Analysis
Prince George's Community College

Helen S. Kerr
Director of Institutional Research
Washington College

11:05am - 11:45am

Paper
Caucus

Winner of 1991 Best Paper Award

Two kinds of information are needed for successful enrollment management: indicators for monitoring the performance of the enrollment management plan, and policy analyses to inform enrollment management strategies. An integrated approach to providing this information will be presented. Its use at both liberal arts and community colleges will be discussed.

Moderator: Kathleen Keenan
Massasoit Community College

12:00noon - 4:00pm

Steering Committee Meeting - Suite 331

ddd
Desktop Design by Pat Diehl
Research Technician
Prince George's Community College

1991-92 Steering Committee

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The College Student Experiences Questionnaire: A Follow-Up Study of Academic and Social Skills Development

Karen W. Bauer, Ph.D.
Office of Institutional Research and Planning
The University of Delaware

Introduction and Statement of Purpose

With heightened emphasis on accountability from campus officials, political leaders, parents and prospective students, assessment of students' academic and social skills has become an increasingly important issue. As such, college officials are aware of the need to document the development of intellectual and personal/social skills of students. As assessment increased in importance over the past decade, it has emerged as an institutional, state, and national concern and was given "particular urgency by legislation" in mandating student outcomes assessment in several states (Anrig, 1987). Edgerton (1990) reported that more than three-fourths of all states have some sort of student assessment effort planned or in place. Many of these programs that have already been implemented, especially those mandated by state governments, have been done so reluctantly.

Many reasons for this reluctance are cited, ranging from the difficulty in accurately assessing cognitive development to fear that one's campus may not stack up to a competitor institution. In some instances, and with only a minimum of time allotted for evaluation, assessments have provided marginal information, but have not achieved their intended goals. In other instances, however, assessment efforts have enabled faculty, administrators, and students to learn new facets about their campus, its strengths and weaknesses, and how to help students achieve maximal benefits from their college experience.

Assessments of campus environments as well as intellectual and personal growth of college students have been employed to analyze both enrollment management and to maximize college experiences for students. Kaufman and Creamer (1991), for example, found that the quality of effort in peer interactions reported on the College Student Experiences Questionnaire (CSEQ) had a significant impact on personal/social gains and that the quality of effort put forth in course work and use of the library were significantly related to reported intellectual gains.

As opposed to information obtained from cross-sectional research, longitudinal assessment of academic and social skills is critical to our understanding of students and their development. While cross-sectional data represents informative "snapshots," information obtained through two or more follow-ups can provide more comprehensive and likely more accurate information about when, where, and, possibly why students make academic and social progress. In noting the need for more longitudinal research on the effects of college on students, Pascarella and Terenzini (1991) believe that creating effective educational interventions requires knowing when the intervention will make a difference. The needs and thus educational programs are different for traditional freshmen than juniors, and specific programs must be targeted to students at their point of readiness. Whereas the first-year student might greatly benefit from programs designed to orient them to campus services, for example, these programs may not be beneficial to the third or fourth-year student who already has broad knowledge of the campus. Conversely, while seniors may benefit from programs that help identify how their knowledge acquired in college translates into job skills, whereas freshmen may not yet ready to focus on this issue.

This study addresses the use of the College Student Experiences Questionnaire (CSEQ; Pace, 1987) to examine differences in self-reported gains that students make in academic and personal/social development between their freshman and senior years. Analysis of such gains can help college officials better understand specific areas of growth for students, as well as other areas that might need attention. Such findings can also be a valuable part of an institution's comprehensive assessment efforts. The research questions addressed in this study are: (a) in what areas of academic and personal development are students reporting progress; (b) are quality of effort scores different for students as freshmen and seniors? and (c) are there significant differences in estimate of gains scores between the freshman and senior years?

Literature Review

Numerous researchers including Sanford (1967), Brown (1972), Astin (1985), Chickering (1969), Bean (1990), and Tinto (1987) have discussed the need to educate the whole student. Feldman and Newcomb (1969) introduced the idea that peer group influences are crucial to the college student's development. More recently, Tinto (1987) presented his model for student retention and has discussed the effects of interaction between the student and the environment. Pascarella (1985) and Pascarella, Terenzini, and Wolfle (1986) and Tinto (1975; 1987) believe that academic and social integration are crucial factors that will determine a student's chances for success in college. In investigating the reciprocity between college satisfaction and performance, Bean and Bradley (1986) found that level of student satisfaction affected student performance as measured by GPA. Similarly, Buczynski (1991) found that students with more developed overall sense of self as a college freshman gained more intellectually than those who did not.

In his involvement theory, Astin (1985) believed that students learn best when they become involved. Involvement, for Astin, includes the investment of physical and psychological energy, and occurs along a continuum. Involvement is both qualitative and quantitative and is directly proportional to the quality and quantity of students interaction in that program. Finally, Astin believed the effectiveness of a policy or practice is related to the degree to which students are involved (pp. 135-136). From this theory, one could posit that degree to which students are involved in academic and extracurricular activities are an indication of their level of student development, and such development can be measured by involvement in collegiate activities.

Similar to Astin, Pace (1984; 1987) believed that learning and development occur throughout undergraduate years. Pace (1984) argued that education is both a process and a product, but that educators typically look only at the end product. Educational programs can be more effectively evaluated when the quality of the educational experience or process is examined, and the amount, scope, and quality of students' efforts are key factors to be used in identifying the quality of the educational process. Thus, Pace, like Astin (1985) believed that students will gain the most from their college experience when they are involved in a variety of campus activities and services.

Method

Instrumentation

The College Student Experiences Questionnaire (CSEQ) is an eight-page paper and pencil survey designed to examine the quality of undergraduate education and pinpoint the sources of progress toward achievement of goals of a college education. The first section of the CSEQ the Quality of Effort Scales contains items that measure the amount, scope, and quality of effort students put in to such areas as college facilities and interacting with faculty and peers. Students are asked to report how often they have engaged in each of the activities during the current school year, and the activities range from requiring little effort or involvement to much more effort. The Quality of Effort Scales have been factor analyzed into four clusters: Academic, Interpersonal Relationships, Group Facilities, and Science. The second section, Characteristics of the College Environment, enables students to characterize the college environment with respect to development of academic, creative, vocational, analytical, and cultural activities. Each question is answered on a seven-point scale, ranging from strong to weak emphasis placed upon the issue in question. In the final section, Estimate of Gains, students indicate the extent to which they have made progress or gains in 21 objectives of higher education. The 21 estimate of gains questions are an indication of the extent to which students believe they are achieving important objectives of their college education and are factor analyzed into five groups: Personal/Social; Science/Technical; General Education, Literature and Arts; Intellectual Skills, and Vocational Preparation Gains.[1]

Sample

The first CSEQ was mailed to 3,000 undergraduate students at the University of Delaware during the spring semester, 1989. Participants were chosen from a computer-generated stratified random sample of students proportionately chosen from eight undergraduate colleges. Usable responses were received from 929 students for a response rate of 31 percent. Of the 929 students who completed surveys in spring 1989 (approximately one-fourth were freshmen), 190 were still enrolled during the spring 1992 and were thus mailed a follow-up survey. One hundred and fourteen students returned the follow-up survey for a response rate of 60 percent.

Results

Table 1 lists freshman and senior year responses to selected quality of effort scales. Students reported putting forth significantly greater effort in their experiences with the library, faculty, clubs/organizations, and student conversations during their senior year than during their freshman year. Findings also show that students put forth greater effort in their writing, science/applications & procedures, and college housing experiences as freshmen compared to their experiences in these areas as seniors.

Table 2 reports the top five questions in which seniors responded "quite a bit" or more when asked how much they had gained in that area over their college experience up to now. Seniors reported substantial gains in the ability to learn independently, to synthesize ideas, understand oneself, in acquiring knowledge and skills applicable to a specific job, and acquiring career-relevant information. Gains in these five areas were noted at similar levels for students in the doctoral norms.

Multivariate main effects showed significant differences between freshman and senior year quality of effort and estimate of gains scores. Since the multivariate main effects indicated significant differences, paired T-tests were performed to examine differences for each factor. T-test results are presented in Tables 3 and 4. Figures 1 through 4 provide more detail of freshman to senior year differences. T values for three of the four quality of effort clusters indicated that students reported putting forth greater effort in academic and personal/social activities as seniors compared to when freshmen. Only in the science cluster did students report greater effort as freshmen. Similarly, T values for all five estimate of gains factors indicated that students reported making greater academic and social gains through their senior year compared to their freshman year.

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[1] The Quality of Effort Additive Cluster scores are as follows:

Academic = library + faculty + course + writing
Interpersonal = amt + pers + stacq + contps + coninfo
Group facilities = union + athl + clubs
Science = science

The Estimate of Gains additive factor scores are as follows:

Vocational Preparation = voc + career + spec
Intellectual Skills = analy + synth + quant + inq
Gen Ed, Literat, & Arts = genled + lit + arts + write + phils
Science/Technical = sci + sci/tech + consq s/t
Personal/Social = self + others + values + team + health

Discussion and Implications

This study examined differences in academic and social gains made by college students from the freshman to senior year. Results from this study found that students put forth greater effort in the library, faculty interactions, clubs/organizations, and student conversations in their senior year compared to their freshman year, and reported more effort in writing, science applications and procedures, and college housing as freshmen. It is likely that class assignments in the senior year may likely require obtaining published research studies and more in-depth information whereas freshman assignments may focus more on basic reading and writing. Because it is likely that freshmen feel less confident of their ability to interact with faculty and other students, it is reasonable to find students putting forth greater effort with faculty, student conversations, and involvement in student clubs and organization in their senior year compared to their freshman year. In addition, some student clubs such as honor societies may require a certain number of earned hours be completed before initiation into that group is even considered. In these cases, freshmen do not even have the option of being involved and would thus necessarily report less involvement in club activities.

The finding of less involvement in college housing at the senior year is expected because most upper-class students at this institution choose to move to off-campus housing. In addition, only about 15% of the undergraduates are involved in a Greek organization.

The finding that students put forth greater effort in their writing experiences as freshmen might indicate that students are completing more writing assignments in a composition class, or may just perceive their writing efforts to be greater when compared to writing assignments completed in high school. In addition, these findings might suggest that seniors have achieved a higher level of writing skill and are more confident about their writing, and thus report lower overall effort.

Findings from this study also found gains reported through the senior year to be greater than those achieved during the freshman year. This was an expected finding and one that is consistent with the institutional mission.

Because this was a small non-random sample, results are not generalizable to the full campus population. In addition, the CSEQ norms book does not include item responses by such variables as gender, GPA, or intent to pursue graduate study, thus findings must be interpreted cautiously and uniquely for the campus under study.

Because all information about students' gains is self-reported, data must be interpreted cautiously. In general, the accuracy of self-reported information in survey research depends on the clarity of the items, whether the respondents have an adequate base of knowledge from which to answer the questions, and the degree to which the respondents respond seriously (Pace, 1984). Although Pace reports that the CSEQ meets these criteria and is thus accurate, he also notes that the Estimate of Gains section is not as explicit and specific as the other two sections. In the Gains section, students are asked to report how much gain or progress that have made "in college up to now." Differences in Gains will likely occur for students by class level and major. Because seniors have a longer time period in which to make progress, it is likely that seniors' gains scores are highest with freshmen scores the lowest.

Some researchers question the validity of change scores (Cronbach, 1970; Linn, 1989; Thorndike & Hagen, 1977). One problem centers on the magnitude of change being correlated with the initial score. Additional regression or multivariate analyses with freshman scores used as a covariate to interpret senior year gains might prove beneficial. Another problem revolves around the problem of not knowing what kinds of differential educational experiences these students have encountered over the three years between the first and second measure of gains. It is likely that students have experienced the campus differently, and these differences may affect their scores. An improved methodology would include obtaining gains scores each year as opposed to just freshman and senior years, and as such, would yield more accurate information on the myriad factors impacting students' college experiences.

Issues for future study include analyses by gender, class level, major, and analysis by differential degree of progress. During the time of college enrollment, the individual who begins at a low level of academic and social development and ends four years later at a high level is making larger gains than the individual who begins at a medium or high level of academic and social development and ends at a high level similar to the first individual. Such qualitative differences in gains scores are more difficult to measure, but may be achieved more easily through a longitudinal study which assesses individuals from matriculation through graduation.

Implications for Future Practice and Program Development

Findings from this or similar study can be very helpful when targeting specific areas for student support. When evaluating existing and potential policies, programs, and support services, one might ask such questions as:

1. Do the findings from this study match our institutional mission and other goals for our students? Are students making the greatest gains in areas that we believe are consistent with our mission and goals? If not, what can we do?

2. Are our freshmen putting forth greatest effort in areas that we believe will benefit them the most and help them become integrated into the campus community? Similarly, are seniors putting forth greatest efforts in areas that will ease their transition into work and/or graduate school?

3. In what ways are our freshmen/underclassmen different from our seniors/upperclassmen? Do they have different academic and social needs? Should we target different kinds of programs to different levels of students?

4. Are the writing experiences sufficient at each class level? What kinds of writing experiences might faculty wish to include to encourage seniors to continue to refine their writing skills? Similar question for reading, abstract thinking, ability to work independently, etc.

5. Because we know (from the literature) that involvement in the campus community is critical for retention, how can we encourage students to become involved in campus activities earlier? What programs do/should we have that help students feel confident to succeed in academic and social activities?

Table 1
Freshman to Senior Year Differences for
Selected Quality of Effort Scales

PE Scale	$\bar{X}$ Freshman Yr	$\bar{X}$ Senior Yr
Library Experiences	17.24	19.24**
Experiences w/Faculty	17.85	21.60**
Clubs & Organizations	17.88	20.71**
Topics in Conversations	28.21	31.43**
Writing	26.46	24.77**
Science/Technology	17.08	15.49**
Dorms/Frat/Sor	27.00	23.82**

** differences between freshman and senior score, $p < .01$

Table 2
Mean Scores for Questions With Greatest Gains

Gains Question	$\bar{X}$ Freshman Yr	$\bar{X}$ Senior Yr
Individ Inquiry	2.95	3.30**
Synthesis	2.64	3.04**
Understand Self	2.83	3.04**
Voc Specialization	2.39	3.01**
Career	2.62	3.00*

* difference between freshman and senior scores, $p< .05$; ** $p<.01$

Table 3
Paired T-Test Statistics for Quality of Effort Clusters

Factor	$\bar{X}$ Freshman Yr	$\bar{X}$ Senior Yr	DF	t value
Academic	90.16	94.54	113	3.42**
Interpersl	106.38	112.55	113	4.25**
Group Facil	55.25	58.46	113	2.99**
Science	15.49	17.08	108	-3.33**

** $p < .01$

Table 4
Paired T-test Statistics for Estimate of Gains Factors

Factor	$\bar{X}$ Freshman Yr	$\bar{X}$ Senior Yr	DF	t value
Vocat Prep.	7.10	8.94	111	8.49*
Intellectual	10.37	11.63	111	4.68*
Gen Education	10.72	12.08	111	5.13*
Science/Tech	6.00	6.81	111	3.72*
Pers/Social	12.92	14.50	111	5.16*

* $p<.001$

Figure 1

Freshman to Senior Year Quality of Effort Scores
Academic Cluster

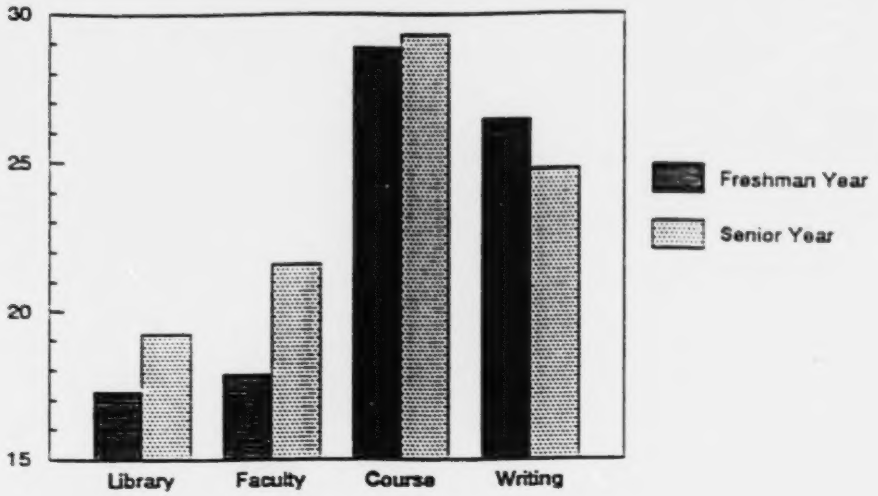


Figure 2

Freshman to Senior Year Quality of Effort Scores
Group Facilities and Science Clusters

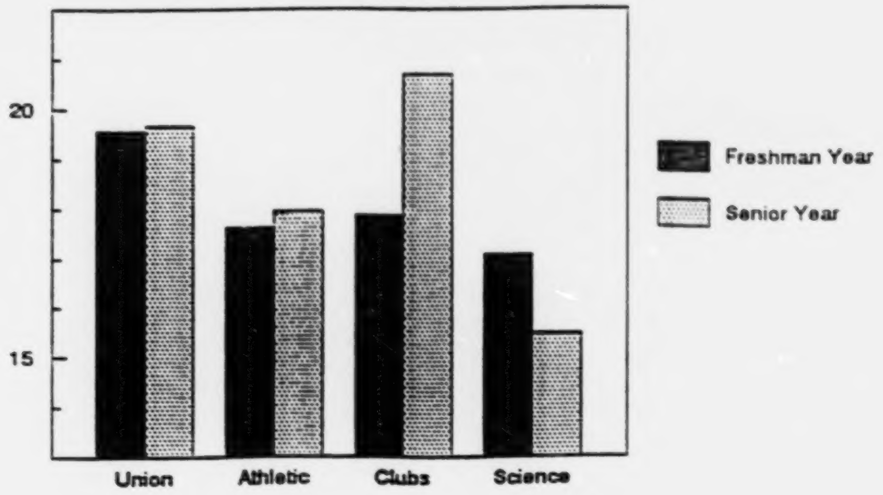


Figure 3

Freshman to Senior Year Estimate of Gains
Intellectual Skills Factor

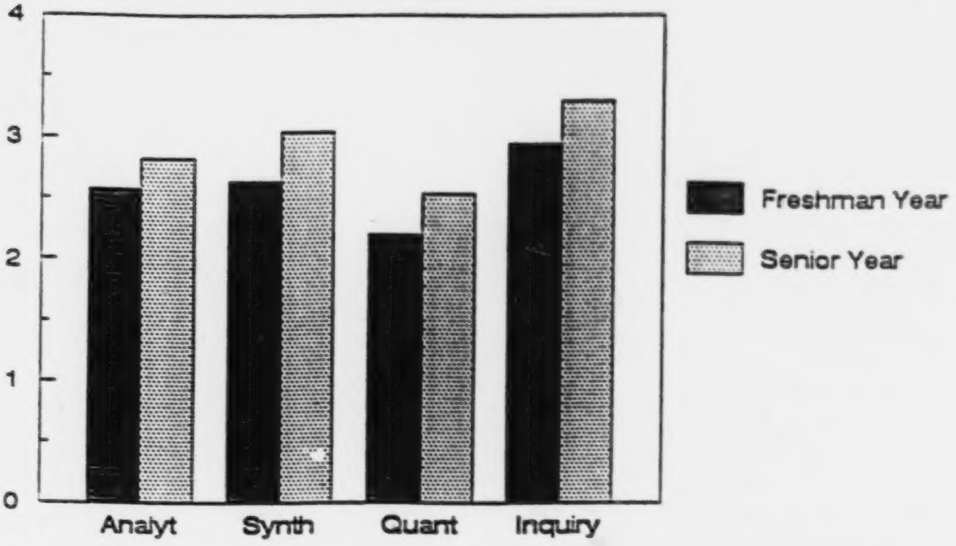
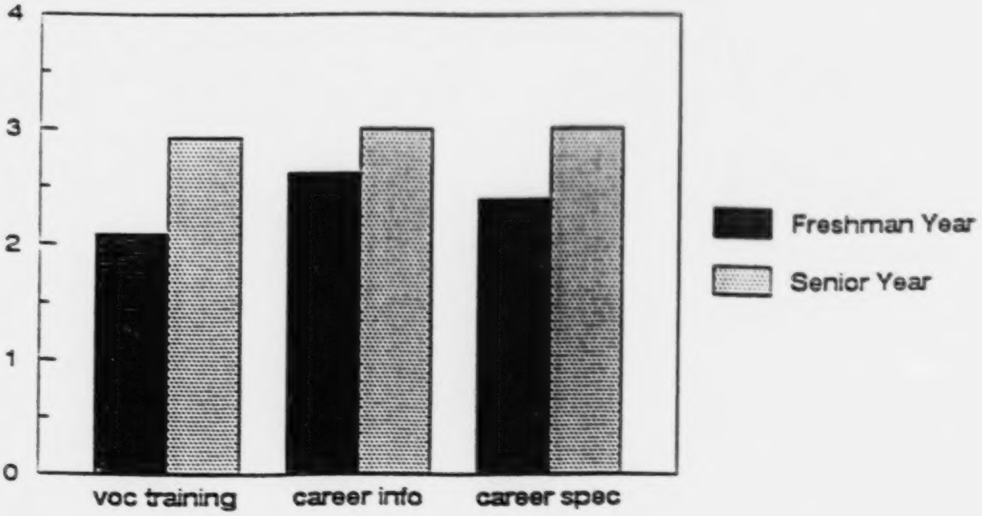


Figure 4

Freshman to Senior Year Estimate of Gains
Vocational Preparation Factor



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Variations In the Personal Goals of College Freshmen and In the Goals of Different Freshmen Classes

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This paper deals with the personal goals and objectives that entering students bring to college, as measured by the American Freshmen Survey (AFS) administered by the Cooperative Institutional Research Program (CIRP).[1] It starts with a reduction of a multiplicity of personal goals to broader sets of related goals. The first question we then pose is "What are the characteristics of students who have different sets of personal objectives?" As a marketing question, this translates into, "Where can we go to obtain applicants who are likely to have particular objectives?". This question assumes a particular importance if an institution seeks students whose goals match those of the institution or a particular program. It is also important when an institution wishes to enroll a class that brings diverse goals and values to the institution as a means of producing an enriched educational environment. The second question in our agenda is "Do institutions differ in the types of goals and values that their freshmen bring to college?". This is a question that can help the officials who are responsible for marketing a college determine where it is positioned in the marketplace and why students may be attracted to it, and to assess the match between the students who are enrolling and the objectives and values of the institution and its personnel. The third question we examine is "If the entering classes of different institutions do exhibit different goals and values, what are the characteristics of institutions that are associated with differences in their freshmen classes?". Again, the answer to this question will help an institution understand its place in the market. Finally, we address the question, "How much diversity exists within freshmen classes on the variables that we are examining and what institutional characteristics are associated with different amounts of heterogeneity?". This is an important question for any educator who believes that exposure to different ideas and values is a valuable ingredient in an effective college education. It can also help identify the extent to which a differentiated set of services needs to be offered to students.

The Data

The data that we will examine come from the 1991 administration of the American Freshmen Survey at 18 members of the Consortium on Financing Higher Education (COFHE). The members of COFHE are all private colleges and universities with relatively high tuition (and financial aid) levels; they also tend to be highly selective (that is, relatively low admission rates and/or high average SAT scores for their entering freshmen) and to draw students from broad geographic bases.

In our 11,003 person data set, the samples of freshmen from the 18 institutions range from 176 to 1,248. These sets of respondents represent from 36 to 100 percent of their institution's entering classes; nine obtained data from at least 90 percent, while another four had response rates in the 80-89 percent range. The data set includes students from four women's colleges, seven coeducational colleges, and six universities.

The average verbal SAT score reported by these students was 610; 40 percent reported an average high school grade of A or A+. Thirty-six percent reported family incomes of $100,000 or more. Ninety five percent aspired to degrees beyond the bachelor's level.

The AFS asks students to rate "the importance to you personally" of 18 statements of goals or objectives. Fifteen of these items are listed in Table 1 under the heading "Long-term goals." They are rated on a four-point scale, with the points labeled: not important, somewhat important, very important, and essential. The questionnaire also asks about 11 reasons for going to college and instructs students to rate their importance; six of these are listed as "Short-term goals" in Table 1. These latter goals are rated on a three-point scale: not important, somewhat important, and very important. The questionnaire also obtains a wide variety of data about personal and family characteristics, and past experiences and accomplishments.

Indexes of Personal Goals

One of the problems that confronts users of AFS data, especially where institutional comparisons are concerned, is the large number of variables that exist, even within a particular question. We sought to reduce this number by searching for meaningful, multivariate measures of distinctive types of personal goals. We chose factor analysis as the vehicle for pursuing this objective. We subjected the 18 long-term goals and 11 reasons for attending college to separate principal components factor analysis. We then submitted scales constructed from the items that had a loading of .50 or greater on each rotated factor to reliability analysis; the scales were simple summations of the component variables divided by the number of variables in the scale. The scales that resulted from this factor analysis and the subsequent reliability-analysis refinement are shown in Table 1; the average importance rating for each scale is also given.

Because of the different rating scales, it is difficult to assess the relative importance of these dimensions across the two questions. Given the three-point scale, we could conclude that the Intellectual goals involved in choosing to attend college rank highest for these entering freshmen. Among the long-term goals, Expertise ranked highest, followed by Altruistic goals. In this paper we concentrate our attention on the first three long-term goals and the first short-term goal; we chose these because they represented conceptually distinctive domains.

Where to Look for Students with Particular Types of Personal Goals

If faculty, or an admissions officer acting on their behalf, wants to find students with particular types of personal goals, where might one look first? In order to answer this question we examined the relationships between scores on the four sets of personal goals noted above and a variety of background and personal characteristics.[2]

Table 1
Factor-Analysis-Derived American Freshmen Survey Goals

Long-term goals	Specific Items	Average Rating
Altruistic	Help others in difficulty Be involved in environmental clean up Participate in community action programs Promote racial understanding	2.56
Political Activist	Keep up to date on political affairs Influence political structure Influence social values	2.48
Economic Success	Be successful in own business Have administrative responsibility Be very well off financially	2.23
Artistic	Create artistic work Become accomplished in a performing art Write original works	1.73
Expertise	Become authority in my own field Obtain recognition from colleagues	2.76
Short-term goals		
Intellectual	Learn more about things Improve reading and study skills Become a more cultured person Gain general education	2.62
Instrumental	Get a better job Make more money	2.38

Note: Long-term goals rated on 4-point scale (4=essential); short-term goals on 3-point scale 3=very important).

Three Long-term goals and five Short-term goals either did not load on any factor at the .50 level or substantially reduced the reliability of the indexes to which they were assigned.

Altruism

Women had stronger altruism goals than men. Among *racial/ethnic* groups, the goals of African-American, Mexican-American, and Puerto Rican students were the most altruistic, differing from at least the white student group which scored lowest on this dimension. When compared to white students, significant differences were also found for Asian-Americans and the residual category, "other" race.

Students whose *parents* are divorced or separated had higher altruistic goals than students whose parents live with each other. Students whose *religious preference* was "other religion" scored significantly higher on the altruism index than Lutherans, Jews, Roman Catholics, and those who indicated that they had no religious preference. Among this latter set of religions, Lutherans had the lowest scores. Students who traveled a *distance* of 500 miles or more from home to their college had higher altruism scores than those who enrolled closer to home.

Family income is related negatively to altruistic goals. Students with family incomes of less than $25,000 had significantly higher altruism scores than students who reported family incomes between $50,000 and 99,999 and those with incomes of $100,000 or greater. Children of fathers whose *occupationn* was in religious, social service or a related profession had stronger altruism goals than the children of businessmen or of fathers who worked in science or technology.

Among the nine categories of planned *major*, education majors were the most altruistic in their personal goals. They differed significantly from engineering, business, and technical majors. This group, however, represents only one percent of the students in our sample. The substantially larger group of prospective social science majors had the second highest scores; this group differed significantly from students who were planning majors in engineering, business, natural sciences, or technical areas, and the "undecided" freshmen. Prospective engineers, who constituted 10 percent of the sample, had the lowest scores; they were significantly less altruistic than the majors in natural science, pre-professional areas, social sciences, education, and a group consisting of art, literature, and humanities majors.

Students who indicated that they are likely to have *careers* in a combined category of social service and religion had the highest altruism scores; they were significantly higher than students who were headed for careers in science, engineering, and technical areas; business; and the residual "other" category. Students who planned to obtain law, medical, or other doctoral *degrees* were more altruistic in their goals than students who were stopping at other master's or bachelor's degrees.

For each index, all characteristics that showed a significant difference were submitted to a stepwise multiple regression. We created dummy variables for each characteristic which was coded "1" for all categories that are listed above as significantly higher than other categories on a given characteristic, and "0" for the other categories. All the characteristics noted above remained in the equation (at a .05 significance level) except for religious preference. Gender, race and highest degree planned were the most powerful predictors of scores on this index.

Political Action

Women scored higher than men on the political action goals index. American Indian students had the highest political action scores among all *racial/ethnic* groups, but differed reliably only from the Asian-American group. With the lowest level of interest in these goals among all racial groups, Asian-American students differed significantly from four of the remaining five groups: White, "other," African-American, and Mexican-American students. White students had the second lowest scores which differed significantly from those of Mexican-American, African-American and "other" students.

Students who have one or more deceased *parents* were the most likely to espouse political activism as a personal goal, while students who reported that their parents live together had the lowest scores. The latter group differed significantly from students who reported at least one parent as deceased and from students who reported that their parents are divorced or separated. Students who traveled a *distance* of 500 miles or more to attend college were more likely to value political action than students who stayed closer to home.

Students whose *father's occupation* is in our broad social services and religion category had the highest political activism scores; they were significantly higher than students whose fathers are in technical or scientific occupations, who had the lowest scores. Students whose fathers are lawyers also had significantly higher political action goals than students whose fathers were employed in technical or scientific areas, but lawyers' offspring were also significantly more political than the children of fathers with medical occupations. Mother's occupation showed patterns identical to father's.

The highest scores on our political activist scale were found among prospective social science *majors* who differed significantly from all other prospective major groups. Engineering, technical, and other professional categories had the lowest scores on this index. Students who were likely to major in the arts, literature, or humanities had high scores which differed significantly from the five groups with the lowest political action scores.

Among probable *careers*, students who were bound for the bar had the highest scores on the political activism dimension. This group of future lawyers differed significantly from all other career categories except for students who planned careers in social service/religious/and similar professions. Those who plan careers in the latter area also scored significantly higher than the other career groups. Thus, it is not surprising that students whose *highest planned degree* is a law degree scored higher on this index than students with any other degree aspirations. At the same time, students whose degree plans include a doctorate were significantly more political in their goals than students who plan to obtain only a bachelor's degree or a medical degree.

In our stepwise regression analysis all these variables stayed; major, career and race were the three most powerful predictors of political action scores.

Economic Success

Men were more interested than women in economic success. African-American students had the highest scores of all *racial/ethnic* groups on the economic success scale, and differed significantly from white, American Indian, "other" and Asian students. Asian students had the second highest scores, differing significantly from the white and "other" groups.

Some relatively non-traditional *religions*, in the American context, were the most likely to embrace economic success goals. The highest scores on this index were found among Islamic, Baptist, Eastern Orthodox, and Buddhist students, all of whom differed from two or more other religious groups. Lack of religious identification is associated with a low economic success orientation; students who marked "none" for religious were significantly lower on this index than ten other groups, including Roman Catholic, Jewish, Methodist, Episcopal, and Presbyterian. Quakers had the lowest scores among all religious groups (which goes somewhat against the old adage that they came to America to do good, and did quite well).

Students who had one or both *parents* who were deceased were the most likely to be oriented toward economic success; they score significantly higher than students whose parents were divorced or separated. Students whose parents were divorced or separated had the lowest scores; they were significantly lower than the other two groups.

Private *secondary schools* appear to breed, or attract, students with relatively strong drives for economic success. Students from private denominational secondary schools had higher economic success scores than students from private nondenominational schools. Students from public schools had significantly lower scores than those who attended either private denominational or private nondenominational schools. High-achieving students were less likely than their peers to be oriented toward economic success. Students with high school *grade point averages* in the "B- or lower" and B+/B categories were more likely than students with grades of A- or higher to have high economic success scores. Students who came from a *distance* of 500 miles or less to college had higher scores on this index than students who traveled farther.

Students whose *father's occupation* was in business were the most likely to value economic success as a personal goal; they differed in this regard from students whose fathers were in science or engineering and from those with fathers in education or art. The second highest mean was for medical occupations which differed significantly from the group whose fathers were in science or engineering. Mother's occupation showed similar patterns on this index.

Not surprisingly, prospective business *majors* had significantly high scores on the economic success index, different from all other groups of majors. Engineering and "other professional" majors also had high scores which differed significantly from four or more groups. The lowest levels of economic success goals were found among arts, literature and humanities majors, who differed significantly from all but the education and "other" categories.

In several categories, the probable *career* reported by students produced statistically significant differences on the economic success dimension. Students who were headed for business careers scored significantly higher on this index than all other career areas, but students who aspired to law or medical careers also scored high, and differed from four or more other occupational areas. When a student's highest *planned degree* is a law degree, he or she is likely to value economic success significantly more than students who aspire to only to a bachelor's degree, a master's or a medical degree. In addition, students whose goals include a medical or master's degree had higher scores on average than those who were planning to obtain a doctorate.

In our stepwise regression, all characteristics except for parents' marital status were significant. Career plans, probable major, and race were the first three entries in the model.

Intellectual

Women scored higher than men on the intellectual index. Mexican-Americans and the students who marked "other" for *race/ethnic* group were significantly higher than whites on this index. Students who are willing to travel a substantial *distance* to college had stronger intellectual goals than their less adventuresome peers.

Students who planned to *major* in the social sciences or in the arts, literature, or humanities had the highest scores on this index; these two groups, plus students who were undecided about a major and those who planned a major in our "professions" category were significantly higher than students who planned to major in business, engineering, or technology and other fields (our residual category). Engineering majors had the lowest scores and were significantly lower than five of our majors groups, including future natural science majors. A sampling of the differences across majors in the percentages who scored three or higher on this index includes: arts, literature, and the humanities—32 percent; social sciences—33 percent; natural sciences—29 percent; engineering—20 percent.

Among our anticipated *career* groups, students who expected to work in the social science, religious or other professions had the highest intellectual scores, significantly higher than students who were headed for careers in science or engineering, or in business. The science/engineering crowd scored lowest on this dimension, significantly lower than every career group except business. Entering freshmen who expected to get a doctorate were the most intellectually oriented, differing significantly from their peers who expected to get a bachelor's degree or less, a master's degree, or a medical degree as their *highest degree*.

The stepwise regression eliminated probable career from the equation at the .05 level of significance. The three most powerful predictors of an intellectual orientation were gender, probable major, and distance from home.

How Freshmen Classes Differ Across Institutions

We looked at how the freshmen classes at 17 of our institutions differed on the four sets of personal goals that we have been examining.[3] We wanted to know two things: (1) do the freshmen at different institutions tend to have different personal goals as measured by their average scores on these dimensions? (2) does the amount of diversity represented within a freshmen class differ across institutions? If the answer to either question was "yes," we also wanted to know whether particular characteristics of institutions are associated with their average scores or the amount of diversity they exhibited on the particular dimension.

Research on how students differ across institutions tends to focus on the former type of measure—average scores or percentages with a particular score. Indeed this is an important approach to assessing the climate or socio/psychological press at an institution and across institutions. But we also believe that considerable educational benefits occur when students meet peers who have different backgrounds or values from their own. Therefore, we would argue that the assessment of institutional differences relating to students should look at both means and variances, and that greater diversity within an institution is more desirable than less diversity.

Institutional Differences in Freshmen Cultures

These institutions—all private, all high-priced, all quite selective—differ considerably in the values that their freshmen bring to campus as reflected in these sets of personal goals. Seventeen institutions produce 136 pairs of institutions which can be tested for differences. We looked at both how many pairs of institutions have significantly different mean scores and the number of institutions that differ significantly from the institutions that have the highest score and the lowest score on each index (the lowest scoring institutions tended to be most distinctive on three of the indexes). The two measures provide slightly different perspectives. Across the group of institutions, the greatest differentiation occurs for the Economic Success dimension—almost one-half (62 percent) of the pairs that we examined have significantly different mean scores. On the other three dimensions, approximately one-quarter of the pairs were significantly different from each other.

Tests of differences of means across groups assume that the variances on the dependent variables are equal. We found this not to be the case for any of our four scales and these differences in the mean scores need to be interpreted with appropriate caution. For three of the scales—Altruism, Political Action, and Economic Success—only one institution was significantly different from substantial numbers of the others when we applied a variety of statistical tests for differences to the absolute values of the variations of each individual's score from the means for their college.[4] On the remaining scale—Intellectual—the number of significant differences in the institutional variations was quite large, by some tests, so the data on differences in means should be considered particularly subject to the caution regarding equal variances. The second measure—significant differences for the highest and lowest scoring institutions—indicates that on two dimensions some institutions in this set have very distinctive entering classes. The highest and the lowest institutions on the Economic Success dimension were significantly different from two-thirds of the other institutions. On the Intellectual dimension, the low institution was different from all but 2 of the others (although the caution about unequal variances should be borne in mind).

Institutional Characteristics Associated with Distinctive Freshmen Cultures

High scores on these four dimensions are associated with several characteristics of the institutions. We examined the relationships between the average institutional scores on these dimensions and 16 institutional characteristics.

Table 2 shows the characteristics that were correlated (Pearson's r) with the average institutional scores for each personal-goals dimension at a significance level of .10 or less[5] Three characteristics were not significantly associated with any of these dimensions—neither admissions or yield rates, nor *U.S. News and World Report*'s overall rating. The largest influence on the general character of an institution's freshmen class, as revealed by these measures of student goals, comes from being situated in an urban environment. The correlation between being an urban institution (versus all others) and the Economic Success scale is .75; the correlation between being a suburban institution and the average score on this scale is -.48. The average Economic Success score of freshmen at urban institutions is 2.39 versus 1.95 for suburban and 2.09 for rural freshmen (in percentage terms, these figures translate into the following percentages who gave an average rating to the three variables in this index of 3 or higher: urban—27%; suburban—13%; rural—16%). COFHE's urban institutions also have significantly lower scores on the Altruism and Intellectual scales compared to their institutional peers in the 'burbs and the boondocks. Colleges and universities tend to enroll freshmen with significantly different goals. College freshmen are more likely than their peers in universities to score high on the Altruism and Intellectual scales, and lower on the Economic Success scale. The institutional-type effects on Altruism and Intellectual goals are slightly greater than the urban location effects. (Two of the 11 colleges are urban, whereas five of the six universities are).

Diversity Within Freshmen Classes

Diversity has two sorts of implications for colleges. As we noted above, it can contribute to a richness of cultures and perspectives among students that may enhance their educational development.

Table 2
Correlates of Inter-institutional Differences in the Personal Goals of Freshmen

	Verbal SATs	Urban	Rural	University	Engineering[a]	Class size	Percent Men
Altruism		-.56*		-.66**	-.67**	-.43	-.56*
Political Action	-.47				-.43		
Economic Success	-.45	.75**		.69**	.42	.66**	
Intellectual		-.65**	.49*	-.69**	-.62**		-.64**

* Significant at .05 level or less **Significant at .01 level or less
All other coefficients are significant at the .10 level or less

[a] Presence of an engineering school.

Note: Two correlations were removed to meet space limitations: location outside of New England or middle Atlantic regions and Political Action (-.47); suburban location and Economic Success (-.48).

Table 3
Correlates of Intra-institutional Variations in the Personal Goals of Freshmen

	Urban	Suburban	University	Engineering	Class size	% Men
Altruism			.48*			.42
Political Action			.41			
Economic Success			.45			
Intellectual	.71**	-.56*	.70**	.58*	.56*	.42

*Significant at .05 level or less **Significant at .01 level or less
All other coefficients are significant at the .10 level or less

It also has implications for managing an institution. Greater diversity in student objectives may well produce a need for a more varied student programs, differentiated approaches to advising and personal counseling, and cultivation of a variety of external resources and institutional linkages.

We looked for relationships between institutional characteristics and the heterogeneity within their freshmen classes. Again, our measure of diversity is the absolute difference between individual scores and the institution's mean on each index. Table 3 shows the correlates of greater diversity in the goals of entering freshmen. The entering classes at the universities tend to have a more diverse set of personal objectives than the students who are enrolling at the COFHE colleges.

We also need to consider how much real difference in diversity these particular measures capture. To explore this issue, we divided our Altruism scale into three parts: 1 = a score of less than 2 (2 = somewhat important); 2 = 2 through 3 (3 = very important); 3 = greater than 3. We then looked at the ratio of extreme scores (1+3) to the middle-score group (2) at the institution with the greatest variation and the institution with the least variation in scores. We also looked at the ratio of one extreme group to the other (1÷3, or vice-versa). Both institutions had heavy concentrations of students in the middle group—at the low-variance institution the first ratio ((1+3)/2) was .53; at the high-variance group the ratio was .59 (overall, 65.6% of the students fell in the middle group; for these two institutions the proportions were 63.4 and 65.4). On the other hand, the representation of students at both ends of the spectrum was very different at the two institutions. At the low-variance institution, the smaller group (the low-scorers) was only .37 the size of the larger group; at the high-variance institution, the groups were almost equal in size—the ratio was .88.

Summary

Via factor analysis, the large array of data generated by the American Freshmen Survey can be reduced to more manageable and meaningful indexes. The long-term goals question produces five distinct, and recognizable, dimensions; the short-term goals question produces two distinct dimensions.

We found that students at selective private institutions who have different backgrounds or personal characteristics bring somewhat different personal goals to college. This suggests that an admissions officer who is looking for students who have particular goals, or students with a variety of goals, can use these characteristics as clues regarding where to start looking for them. Intended major is a key source of differentiation that relates to students' personal goals, but gender, race and parental marital status also offer some readily discernible characteristics that are also relevant.

Institutions also differ in the goals that their freshmen bring to college. Major sources of institutional differentiation among these 17 institutions in the general orientations of their entering classes include type of institution (college versus university) and location (urban, suburban, or rural). The freshmen classes at some institutions bring more diverse sets of personal goals than at others. Universities tend to have the greatest amount of this sort of diversity among their freshmen.

Some interesting questions are suggested by this type of research. The diversity issue needs to be explored further. Do students in the most diverse institutions come into contact with students who have distinctly different goals, or does the greater size and complexity of these institutions mean that similar students cluster in smaller homogeneous groups when there is sufficient critical mass to do so? The fact that race is one of the principal sources of personal goal diversity suggests that the lack of inter-racial mixing that occurs on many campuses might impede the development of groups with diverse goals. Likewise, the prominence of intended major as a correlate of distinctive goals suggests that some isolation of students with distinctive values may occur on this basis. If students are indeed exposed to other students with different personal objectives, however, we need to know whether this type of diversity produces any educational benefits (value clarification, et cetera)?

Are the faculty at a given institution aware of the particular goals that their students bring to college, and the variety of goals among a given set of students? How stable are the differences in personal goals that different types of students bring to college? Does a particular student body tend to change its goals in the direction of the prevalent set of goals, or do sub-groups on campus perpetrate, and perhaps reinforce, distinct sets of goals? How do the personal goals that students bring to college influence the experiences they have during college, the activities they pursue, and the benefits of attendance that they carry away from their time on campus? Do students with different personal goals desire, or need, different types of extra-curricular programs and services?

Footnotes

[1] An expanded version of this paper, which includes more detail on the independent variables, was distributed at the meeting; it can be obtained from either author.

[2] For all multiple comparisons of means in this paper we used the Scheffé test contained in the Oneway procedure of SPSS with an alpha level of .05. This test of differences is characterized in the SPSS manual as a "conservative" test.

[3] One institution had a very low response rate on the personal-goals question because of time pressures placed on the students; it was deleted from the remainder of the analysis reported here.

[4] The differences across institutions in the mean values of $X_{ij} - \bar{X}_j$ were subjected to the following tests of differences that are available in the Oneway procedure of SPSS for Windows, using a .05 level of significance: Duncan, Tukey, Scheffé.

[5] We relaxed our significance level to .10 due to the small number of cases.

Risky Practices, Gender and Power: A Study of Heterosexual College Students

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Introduction

Increasing concern about college student populations and transmission of Human Immunodeficiency Virus (the virus thought to cause Acquired Immunodeficiency Syndrome), has led to an extensive literature on the knowledge, beliefs and attitudes about AIDS and HIV and on the sexual practices of U.S. college students (for example, DiClemente et al., 1987; Sunenblick, 1988; Baldwin and Baldwin, 1988a, 1988b; Allard, 1989; Carroll, 1990). We know from this literature that college students typically have relatively accurate knowledge about AIDS and HIV transmission, that there is little or no relationship between knowledge of transmission and reported sexual practices and that few students report changes in risky sexual behavior (for review see Ross and Rosser, 1989).

Much of the existing literature is descriptive. Where there is theoretical grounding, it is in the literature of health-risk behavior which relies primarily on individualistic, psychological models to explain the process of the personalization of risk (see Leviton in Valdiserri, 1989 for a review). There have been few efforts to look beyond individualistic explanatory schemes. Since HIV transmission involves interpersonal sexual behaviors, this is particularly problematic.

The literature of gender, power and sexuality suggests that heterosexual women and men are not equally empowered in sexual relationships. As Ferguson argues,

> ... sexual practices are embedded in social structures like age, gender roles and economic power which tend to give one partner greater control over the other (1989, p. 72).

Existing safer sex guidelines appear to be based on the assumption that heterosexual partners are equally able to implement such safer sex practices as abstinence and condom use. However, much of the recently emerging literature on women and AIDS/HIV assumes women are substantially disempowered in heterosexual relationships and therefore safer sex guidelines are problematic for women. If this is the case, it may in part explain the why high rates of knowledge of HIV transmission have not been shown to lead to high rates of preventive behavior.

Hypotheses

I examine two hypotheses in this paper. The first is that men and women will have different repertoires of safer sex practice. Women are expected to implement different practices intended to enhance knowing their partners and men to report higher condom use than women. The second hypothesis is that those with higher levels of interpersonal power in sexual interactions will be more likely, if they wish to do so, to practice safer sex.

It is anticipated, given prior research findings, that the independent variables; sense of risk for HIV transmission, knowledge of HIV transmission and knowledge of persons with AIDS/HIV will have little impact on safer sex outcomes. Additional independent variables used in the multivariate analysis of hypothesis 2 include--type of relationship, duration of relationship, length of sexual experience, comparative level of sexual experience, comparative commitment to the relationship and number of partners.

This report begins with a description of the sample, followed by a quick discussion of general findings on risky practices, the findings on safer sex practices and finally, the results of logistic regression analyses of the six dependent variables, safer sex practices.

Description of Sample

The sample of 633 sexually active, heterosexual college students was drawn, in Spring 1991, from four public, comprehensive university campuses. The questionnaire was administered during class time in a range of courses sections selected to ensure maximum variance in the sample with regard to gender, class standing and major. The sample was representative of the full-time undergraduate population of the four campuses in terms of age, race, ethnicity, class standing, employment status and major. Part-time undergraduates were underrepresented and students resident on campus slightly over-represented. Respondents came from a wide range of class backgrounds, measured by the level of education attainment of their parents or guardians. The sample was predominantly white, traditional college age and full time, and it contained 361 women (57%) and 272 men (43%).

Risky Practices

Respondents were asked about their sexual practices over the last year. Questions referred specifically to vaginal, anal and oral intercourse. Those who replied that they had engaged in the activity were asked how frequently they and their partner used a condom. The response options were, 1) always; 2) usually; 3) sometimes; 4) seldom; and 5) never.

Vaginal intercourse was the most usual form of sexual activity reported. Only 4 women and 8 men said that they had not had vaginal intercourse in the last year. Only 20% of the men and 16% of the women said that they and their partner always used a condom. There was no significant difference between the reports of men and women on frequency of condom use for vaginal intercourse.

A majority of the sample (77%) said that they had engaged in oral sex during the last year, not as many as had engaged in vaginal intercourse. The overwhelming majority of respondents engaging in oral intercourse (90%), reported never using a condom. Men were more likely to report condom use in this activity than women ($p=<.05$).

The low number of respondents reporting condom use during oral sex may underestimate the number who are protected as the question did not ask about the use of dental dams or other forms of protection during cunnilingus. HIV transmission is possible not only from men to women but also from women to men through cunnilingus. Though it is not often noted in safer sex education materials for heterosexuals, it is suggested that safer sex practice include the use of barriers like dental dams during oral sex. Questions specifically referring to such barriers should be included in future studies. There is still debate about the riskiness of unprotected oral sex as a transmission mechanism, but the debate is about the level of risk, not the fact of risk existing.

Few respondents acknowledged having anal sex, only 36 women and 20 men. Over half the men and 72% of the women said that they never used condoms. Unprotected anal sex is the most risky for sexual transmission of HIV transmission, especially in this case for women. There was no statistically significant difference between men and women in frequency of reported condom use during anal sex.

Looking at all sexual practices, over one half (57%) of the sample reported that they never used condoms. Only 10% reported always using condoms when they had sex in the last year. Among those reporting vaginal intercourse, 82% had had unprotected sex during the preceding year, among those reporting oral intercourse, 99% had had unprotected oral sex in the preceding year (at least insofar as they did not use condoms), and among those having anal intercourse, 89% had had unprotected anal sex in the last year.

My total sample (633 respondents), shows higher rates of unprotected sexual activity in the last year than those found by Fisher and Misovich (1990) in a sample of undergraduates from the University of Connecticut. I find that 78% of the 633 respondents in my sample were at risk of HIV infection from unprotected vaginal sex compared to 64% for Fisher and Misovich, 77% of my 633 respondents were at risk of HIV infection from unprotected oral sex in the last year compared to 40% for Fisher and Misovich and 8% of my sample compared to 6% of Fisher and Misovich's sample were at risk of HIV infection from unprotected anal sex in the year before the study (1990, p. 328). Fisher and Misovich conclude "Overall, a great deal of AIDS risk behavior persists" (p. 329). My data indicate that the same is true of respondents from Connecticut State University.

Reported Safer Sex Practices

Typically, measures of safer sex practice include reported frequency of condom use, number of sexual partners or frequency of intercourse (Carroll 1991). Baldwin and Baldwin used frequency of condom use during vaginal intercourse, number of sexual partners in the three months preceding the survey and a measure of the degree to which the respondents "engaged in casual sex" (1988b, p. 183). Usually, the questions ask for reports of sexual activity in the last year, month or some other specified time period, rather than the last sexual experience. I specifically asked about the last sexual encounter in order to "ground" the responses in a specific memory which enhances their reliability.

The safer sex practice measures used in this study were drawn from safer sex guidelines commonly given to college student populations. The first question about safer sex practice asked whether or not respondents used condoms during their last sexual encounter. The exact wording was as follows, "We used a condom while we were having sex". It was phrased in this way so that women and men would be equally able to answer the question. It is a straightforward measure of safer sex practice which elicited yes/no responses.

Four questions asked respondents if they had followed recommendations for "knowing your partner" by asking their last sexual partner (before having sex with them for the first time) about his/her sexual history, sexually transmitted diseases, intravenous drug use and using a condom.

The number of sexual partners an individual has had is not used as a measure of safer sex practice in this research. If individuals are using safer sex practices, the number of partners does not necessarily increase the risk of HIV infection. In this research, therefore, a measure of "casual" sexual encounters was obtained by asking respondents whether, in the last year, they had had sex with someone they did not know very well.

Table 1 shows that the most common 'safer sex' techniques reported by this group of college students are--asking about sexual history and asking about condom use. While a majority (58%) reported that they had not had sex with someone they did not know well, a considerable number had had sex in the last year with a partner they did not know well. Only one quarter of the sample reported having asked their last sexual partner about sexually transmitted diseases and only 18% asked about possible injecting drug use. Just over one third of the respondents reported having used condoms last time they had sex.

Table 1

Percent of Respondents Using Six Safer Sex Practices by Sex

	Total	Men	Women
Used a condom	36%	44%	29%
Before you first had sex with your most recent sexual partner I asked him/her about:			
Sexual history?	60%	50%	60%
STDs?	26%	20%	30%
IV drug use?	18%	13%	23%
Using a condom?	60%	53%	65%
In the last year I did not have sex with someone I did not know very well.	58%	52%	62%

As my first hypothesis suggested, there were significant differences by gender. Women were more likely than men to report asking about sexual history (p=<.001), asking about sexually transmitted diseases (p=<.01), asking about injecting drug use (p=<.01), asking about condom use (p=<.01) and not having 'casual' sex (p=<.01). As anticipated, men were more likely than women to report using a condom during the last sexual interaction (p=<.001).

It is important to note that practices considered safer sex practices for this study do not necessarily eliminate risk of HIV transmission. The results reported in Table 1 are disturbing. Advice to 'know your partner' and 'know your partner's sexual history' is in many ways, misleading. After all, telling a 'sexual history' is often bound up with courtship itself, a time in which the partners are presenting themselves in the most positive light to each other. Thus, asking about a partners sexual history does not guarantee getting the information necessary to assess the riskiness of unprotected sex with that partner. In this context, 6% of the women in the sample and 16% of the men said they had, in the last year, lied to a potential sexual partner about their sexual history in order to persuade him/her to have sex. Additionally, 5% of the women and 17% of the men said that they had lied about the number of sexual partners they had had in order to persuade someone to have sex with them. Similarly, Cochran and Mays (1990) found substantial willingness to lie in dating relationships.

Safer Sex Practices, Gender and Power

Table 2 presents the results of the logistic regressions of selected independent variables on each of the safer sex practice variables for the sample of heterosexual, sexually active adults. A forward, stepwise variable selection method was used in the analysis. Table 2 presents the coefficients and standard errors for those variables retaining significance in the equations for each of the safer sex practices. Variables treated categorically in all equations were--sex, type of relationship, knowing a person with AIDS/HIV, comparative commitment to the relationship, comparative level of sexual experience and whether or not the last sexual encounter was a first time with that partner. Variable descriptions and codes are shown at the end of the Table 2.

Table 2

Logistic Regression Coefficients Describing the
Effects of Selected Independent Variables
on Each Safer Sex Practice

	Used Condom	Asked History	Asked STDs	Asked IV Drug	Asked Condom	Do Know Partner
Sex	-.23*(.10)	.23*(.10)	.29**(.11)	.32**(.13)	.35***(.09)	
Risk	-.27*(.13)					
Pressure						-.36***(.11)
Communication		.36***(.10)	.30**(.11)		.24**(.09)	
Relate	.44***(.10)	-.33**(.10)		-.31**(.12)		
Howlong	-.36**(.14)	-.34*(.14)				-.46**(.15)
Numpart		-.47***(.13)				-1.2***(.15)
N size	515	519	519	517	517	519
Constant	1.02*	2.27***	-1.16***	1.67***	.41***	3.85***
Goodness-of-Fit						
Chi Square	513	523	516	528	518	538
Significance	.475	.370	.495	.321	.444	.238

(* p=<.05, ** p=<.01, *** p=<.001)   Notes: Numbers in parentheses are standard errors

Codings for Selected Variables Used in Logistic Regression

Sex	(1) Female, (-1) Male
Risk	I think I am at risk for getting infected with HIV through my sexual activities. (1) Strongly Disagree to (4) Strongly Agree
Pressure	Factor Scores on four pressure to have sex questions. The questions asked whether respondents had pressured others or had been pressured themselves to have sex.
Communication	Factor Scores on two sexual communication questions. The questions asked how frequently respondents talked about sex with their sexual partner and whether or not they had requested specific sexual activities during their last sexual experience.
Relate	My relationship status at this time can best be described as a: (1) More Casual Relationships, (-1) Primary, Monogamous Relationships
Howlong	I have been sexually active for: (1) less than three months to (5) 10 years or more
Numpart	Within the last year I have had: (1) One Partner, to (4) 7 or more partners

There is no summary statistic in logistic regression with interpretation comparable to the R2 statistic used in multiple regression analysis. Although several such summary statistics have been proposed, Aldrich and Nelson conclude "Our recommendation ... is to use summary measures with extreme caution, if at all" (1989, p. 59). Table 2 includes the goodness-of-fit chi square for each of the models. In each case, the goodness-of-fit statistic, which compares the observed probabilities to those predicted by the model, has large significance levels, ranging from .23 to .47. This indicates that the models "do not differ significantly from the "perfect" model" (Norusis 1990, p. 52), that is, the estimated models fit the observed data well.

For the total eligible sample the first hypothesis, that men and women will have different repertoires of safer sex practices, was supported by the data for five of the six safer sex variables. As was anticipated, men were significantly more likely than women to report having used condoms the last time they had sex. Women were significantly more likely than men, with all other independent variables controlled, to report asking their potential sexual partners questions with which to assess their "safety" as sexual partners. Women were more likely than men to ask; 1) about a partner's sexual history, 2) about a partner's sexually transmitted diseases, 3) about a partner's IV drug use and 4) about condom use.

The hypothesis also suggested that women would be more likely than men to report having sex only with sexual partners they knew well. Though this was the case in the zero order correlation, it was not supported by the data in the regression analysis where type of relationship was controlled. Data not shown in this paper revealed that respondents in primary, monogamous relationships were more likely to report having sex only with partners they know well and women are more likely than men to be in primary rather than casual relationships. Thus, the relationship between sex and knowing all sexual partners operates indirectly through women's greater preference for primary relationships.

The model not only supports the hypothesis that men and women use different repertoires of safer sex practices, but also reveals that, as anticipated, sex itself is an important explanatory variable for five of the six safer sex practices, independent of interpersonal power or any of the other independent variables.

The second hypothesis, that those with higher levels of interpersonal power will be more likely to practice safer sex than those with lower levels of power was not supported by the data on pressure and was partially supported by the data in the case of the communication dimension of power.

Factor scores on the pressure dimension of power were not significant in explaining five of the six safer sex practices; condom use, asking about sexual history, asking about sexually transmitted diseases, asking about IV drug use or asking about condom use. Pressure was significant in explaining knowing sexual partners well, but not in the expected direction. Those with higher factor scores on this dimension of interpersonal power were less likely than those with lower scores to report having known their sexual partners in the last year well, and knowing your partners well is a recommended risk reduction practice. This suggests that pressure in sexual relations works against the use of at least one safer sex practice, since use of pressure allows the satisfaction of sexual goals without much concern for the sexual partner.

The hypothesis that those with higher levels of power would practice safer sex more frequently was supported for the communication dimension of interpersonal power for three of the six safer sex practices. Those with higher factor scores for communication were more likely to report asking about sexual history, asking about sexually transmitted diseases and asking about condom use than those with lower scores on communication. This suggests that being able to communicate about sexual matters is an important dimension of interpersonal power for practicing safer sex at least in asking some of the questions which allow for an assessment of the riskiness of sexual partners. Dependence on the answers to such questions, as noted earlier, may not be wise if they are the only safer sex practices respondents utilize. It should be noted that factor scores on communication were not significant in explaining condom use, the only sure method of preventing HIV transmission.

Other independent variables retaining significance in some of the regression models included sense of risk, type of relationship, length of sexual experience and number of partners. A full discussion of these findings is not possible in a paper of this length but I do note that in the case of sense of risk, the finding was unanticipated given prior research findings. The data indicated that the more respondents agreed they were at risk, the less likely they were to report condom use during the last sexual encounter. A plausible explanation is that those who do not use condoms accurately perceive themselves as being at risk of transmission. Sense of risk is treated, in many studies, as a cause of safer sex practice. My study indicates that sense of risk may well be a consequence of not using preventive measures.

Policy Implications of Findings for HIV Education and College Students

A key finding for HIV transmission education among young heterosexual college students is that it must take gender into account. Studies of HIV transmission show that women are more vulnerable to transmission from an infected partner during heterosexual intercourse than men. The results of my study show that women, to the extent that they wish to protect themselves from HIV transmission, tend to rely not on condom use, but on an assessment of their partner's "riskiness" through their partner's answers to questions, primarily questions that are quite general, having to do with their partner's sexual history. Educational efforts need to stress the inadequacy of this strategy given the possibility that the answers will not be truthful.

Further, educators should not continue to use such vague advice as "know your partner" or "know your partner's sexual history". Exchange of information on sexual history is, after all, a part of the rituals of courtship. In such a context, eliciting information which is specifically relevant to risk assessment may be difficult and the answers received are likely to be shaped by the context.

The study focuses on safer sex practices with a specific partner and therefore did not treat having a high number of sexual partners as an "unsafe" practice, per se. The results indicate, however, that those with higher numbers of sexual partners are less likely to know their partners well and less likely to have asked about their partners' sexual history than those with fewer partners. Further, those with higher numbers of partners are no more or less likely to report condom use in their last sexual encounter than those with fewer partners. Thus, those with higher numbers of partners may well be more vulnerable to HIV transmission. Education does not need to focus on telling young adults to cut down the number of partners, but to encourage the careful practice of safer sex with all partners.

The finding that men and women have different repertoires of safer sex practice, and that those used by women are likely to leave them vulnerable to HIV transmission suggests that Holland et al. are correct in saying that, " The effectiveness of health education for women will depend on the effectiveness of education for men" (1990, p. 345).

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Assessing County Support for Maryland Community Colleges: An Institutional Research Success Story

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Overview

Institutional research success stories provide new understandings of important issues, lead to changes in campus policies, contribute to improving instruction or student success, save money or raise revenue, or otherwise have a major impact on an institution. Mired down in mandated reporting or responding to the latest ad hoc data request, researchers enjoy too few of these successes. This paper describes a modest library research project--the most sophisticated statistical technique used was simple division--that arguably was the office's most influential ever. It was credited with partially defusing a delicate political situation and preventing a substantial cut in college revenue. The paper concludes with a discussion of why this project was a success, and suggests several strategies for increasing the incidence of such success stories.

Background

Maryland community colleges receive financial support from both the state and their local jurisdiction, as well as revenue from student charges and other income from operations and investments. The relative shares of state, county, and student contributions to college revenues were stipulated in Title 16, Education Article of the Annotated Code of Maryland, as follows: the state was to provide 50 percent, the counties 28 percent, and the students 22 percent of current expenses. The law allowed that the counties not be prohibited from paying more than 28 percent, and the boards of trustees not be prohibited from requiring students to pay more than 22 percent. This has been the case. Statewide, in fiscal year 1991 the 16 locally-governed community colleges received 39 percent of their revenue from local aid, 27 percent from the state, 31 percent from student tuition and fees, and the remaining 3 percent from other sources. (If state paid benefits--$26 million contributed to Social Security, TIAA/CREF, and state retirement plans--are included, the percentages change to 37 percent local, 33 percent state, 28 percent students, and 2 percent other.) The proportion of local aid varied considerably across jurisdictions. In FY91, the local aid share ranged from a low of 29 percent at Prince George's Community College to a high of 50 percent at Dundalk Community College.

The Prince George's Case

Prince George's County is a largely suburban county adjacent to the eastern border of Washington, D.C. With nearly 730,000 residents, the County has a population larger than six states. Driven mostly by in-migration from the District and out-migration to neighboring Maryland counties, the county's black population increased from 14 percent in 1970 to 51 percent in 1990. Enrollment at the community college reflected this change, with student profiles each year a mirror image of the county population. However, with only modest growth in full-time employment over this period, the college's workforce remained predominantly white. This was especially true of the tenured faculty; with almost no growth in positions and little turnover, the full-time faculty was 14 percent minority in 1990--compared to a student body that was 56 percent minority.

Despite the legal guideline stipulating that county aid should provide 28 percent of community college operating budgets, Prince George's County failed to do so during the 1980s. County aid during this period averaged 26 percent of PGCC's budget. Rather than have its overall budget constrained by the county's contribution, the college reached an informal understanding with the county which allowed budgets to grow and the county share to remain below the guideline. At the end of the decade, a "gentlemen's agreement" was reached whereby the County Executive privately pledged to gradually increase county support so that it would meet the 28 percent standard by fiscal year 1992.

The Political Context

The recession in the early 1990s produced a severe fiscal crisis in Maryland. State revenue shortfalls, combined with mandated Medicaid and welfare expenditures, implied large cuts in state aid to higher education and to local jurisdictions. County governments were facing similar fiscal difficulties. It was obvious that college budgets were vulnerable. In addition, the community colleges lacked a unified voice in Annapolis. The governor had announced that the State Board for Community Colleges (SBCC) would be abolished, effective June 30, 1992. SBCC, while a government agency, had served as a presence if not an advocate for community colleges in the state capital. With its demise forthcoming, SBCC lost its effectiveness--and most of its staff, as employees left as soon as alternative jobs were found.

In addition to the financial pressures, other factors contributed to a delicate political situation for PGCC. Prince George's County's rapidly changing demographics made race a component of many local political issues, and the community college was not immune. In 1988, a state legislator threatened to hold up $1.2 million in state aid to PGCC pending his subcommittee's review of the college's affirmative action efforts. Later that spring, the college was asked to testify about its minority procurement policy at a County Council meeting. A 1991 law changing the state funding formula for community colleges included an amendment requiring PGCC--and only PGCC--to provide a detailed cost analysis report annually to the General Assembly. Asked why the college was singled out, a state senator replied that in his opinion the college did not adequately reflect or serve the County's fifty percent African-American population. In response to state aid cuts and subsequent tuition increases, the president of the college's Union of Black Scholars commented, "We are taking this personally because this is a direct hit at our people. If they are not in school, they will be on the street." Several of these issues were played out on the front page of the local newspaper.

The Charge: High Tuition

In 1991, these dissatisfactions coalesced around one issue: PGCC's tuition. Since 1990, the college's tuition had been the highest among Maryland community colleges. Its announced tuition and required fees for FY92 were 12 percent higher than the next most expensive institution. As one state senator put it in a letter to the chairman of the college's Board of Trustees, "Prince George's Community College is almost $20 a credit hour higher than Catonsville! Why?"

While not always the highest, PGCC's student charges were historically above the average for all Maryland community colleges:

Table 1
Tuition and Required Fees per Credit Hour

Fiscal Year	PGCC	Md CC Average
1992	$58.00	$44.51
1991	53.00	41.10
1990	50.00	38.42
1989	40.00	34.00
1988	40.00	32.00
1987	35.00	29.76
1986	33.00	27.88
1985	30.00	26.18

While cognizant that the college's tuition was relatively high, the Board had passed each increase either unanimously or with only one or two no votes. As a group they were, and remained, convinced that the college was operating in a cost-efficient manner and that the increases were needed to maintain the quality of instruction at the institution.

An Institutional Research Initiative

In January 1991, PGCC's director of institutional research and analysis initiated a study of comparative county aid to community colleges in Maryland. This was a proactive effort by the research office; indeed, no one on campus was aware of it until the analysis was completed. This unusual approach reflected the political situation both inside and outside the college, which also influenced the research design. The aid provided by Prince George's County to PGCC would be compared to in-state, suburban community colleges of similar size. This ensured that the peer group would not differ in governance structure, state funding, or other fundamental ways. Only official, public data sources would be used. Aid would be calculated in all obvious ways--as a percent of county expenditures, as a percent of college budgets, in terms of aid per FTE student. Ten years of data would be analyzed. The final report would include displays of computations as well as trends, and include complete appendices of the compiled data. The intent was to present an unassailable product.

The study's design, work, and dissemination were influenced by internal as well as external politics. It was hoped that the study findings might enlighten college employees, if not reduce their anxiety about the budget and political attacks on the college. Historically, participation in governmental relations and county budget negotiations at PGCC had been restricted to the president, his executive assistant, and the vice president for finance. Institutional research had some supporting involvement, providing environmental scanning for strategic planning and enrollment projections for budget development, and was thus somewhat more knowledgeable than most. But the inside strategy meetings were closely guarded and unrequested input not encouraged. Finally, the research office was aware that securing adequate funding for the college was a presidential and Board responsibility, and thus findings demonstrating consistently low funding compared to neighboring jurisdictions had to be handled with particular care.

Analysis of County Contributions to Community Colleges

In this section, highlights of the analysis are presented. Several ways of assessing the relative contribution of county aid to Maryland community colleges were examined. Four peer counties of Prince George's were selected for the analysis based on size, location, and suburban character: Anne Arundel, Baltimore, Howard, and Montgomery. For comparisons among colleges, of the three in Baltimore County, Catonsville and Essex were included but Dundalk, due to its smaller size, was not. Howard Community College, though smaller than the others, was included in the analysis due to its suburban setting and location in the Baltimore-Washington corridor. None of the six colleges studied received supplemental state funding based on Maryland's unusual wealth factor grants.

Dollar Amount of Aid

Baltimore County provided the most community college aid in fiscal year 1991, contributing a total of $31,913,650 to its three community college campuses. Montgomery County was a close second, providing $31,367,118. Prince George's County contributed $10,032,466 to PGCC, an 11 percent increase from the year before. Howard County provided the largest percent increase, providing nearly $7 million, up 22 percent from FY90. Local aid in FY90 and FY91 to the six colleges under investigation was as follows:

Table 2
Dollar Amount of Local Aid, FY90-91

College	FY90 Aid	FY91 Aid	1990-91 Change
Montgomery	$28,792,144	$31,367,118	8.9%
Catonsville	13,274,015	14,247,749	7.3%
Essex	10,976,746	11,450,579	4.3%
Anne Arundel	9,674,590	10,547,970	9.0%
Prince George's	9,036,789	10,032,466	11.0%
Howard	5,725,450	6,986,000	22.0%

County Share of College Operating Budgets

Statewide, county aid provided 39 percent of community college unrestricted revenues in FY91. The table below shows local aid shares of college budgets for the FY87-91 period:

Table 3
County Aid Percentage of College Operating Budgets, FY87-91

College	FY87	FY88	FY89	FY90	FY91
Montgomery	45%	47%	47%	46%	47%
Howard	37	40	42	41	46
Essex	44	45	46	41	42
Catonsville	42	42	43	39	39
Anne Arundel	42	42	40	37	38
Prince George's	25	27	27	27	29

Despite a guideline stipulated in Maryland law that counties were to provide 28 percent of college revenues, Prince George's County failed to do so over the FY87-90 period. PGCC's peers have had much greater shares of their budgets contributed by their counties. The decline in local aid shares in FY90 reflected an 18 percent increase in state formula aid that year.

County Aid per FTE Student

How much aid do counties provide per student? While aid is not allocated on this basis, calculation of county aid per full-time-equivalent student provided a different way of assessing local support of community colleges:

Table 4
County Aid per Full-time-equivalent Student, FY87-91

College	FY87	FY88	FY89	FY90	FY91
Montgomery	$2,141	$2,322	$2,316	$2,321	$2,494
Howard	1,357	1,564	1,758	1,811	2,117
Essex	1,377	1,415	1,566	1,417	1,434
Catonsville	1,384	1,368	1,425	1,365	1,358
Anne Arundel	1,270	1,300	1,234	1,131	1,191
Prince George's	784	821	838	947	1,051

Throughout the FY87-91 period, Prince George's County provided substantially less aid per student than its peer counties. While these ratios reflect changes in enrollment as well as aid levels--Anne Arundel, for example, experienced a 36 percent increase in enrollment over FY87-91--it is clear that

PGCC has operated with considerably less local aid per student than its peers. Aid provided by Howard County increased faster than enrollment growth at Howard Community College, so HCC enjoyed rising levels of local aid per student over the period.

Share of County Budgets Contributed to Community Colleges

Perhaps the most direct way to assess relative county support for community colleges is to calculate the percentage of the counties' general fund expenditures contributed to the college boards of trustees. The Maryland Department of Fiscal Services presents the necessary data in their annual Local Government Finances in Maryland publication. For example, in FY90 Prince George's County allocated $9.1 million to PGCC out of total general fund expenditures of $792.6 million, or 1.1 percent of its budget. Similar data for FY86-90 for Prince George's and its peer counties are shown in the following table:

Table 5
Percentage of County General Fund Expenditures
Contributed to Local Community Colleges

County	FY86	FY87	FY88	FY89	FY90
Baltimore	3.2	3.4	3.5	3.7	3.5
Montgomery	2.3	2.6	2.7	2.8	2.5
Anne Arundel	2.6	2.5	2.5	2.4	2.2
Howard	2.0	1.9	2.1	2.3	2.2
Prince George's	1.2	1.2	1.2	1.2	1.1

As the above table documents, Prince George's County has allocated 1.2 percent or less of its budget to PGCC, while peer counties have contributed on average twice as large a share of their budgets to their community colleges. Community college funding in Prince George's County appears to be a relatively low priority. Table 6, on the next page, shows the percentage of county budgets expended for various functions in fiscal year 1990

Share of Total County Expenditures from All Revenue Sources

An additional way of assessing county support based on expenditure data was an examination of the share of total county expenditures of revenue from all sources, including restricted fund federal and state grants. Local politicians often cite these larger figures which include intergovernmental revenues. In the case of Prince George's, perhaps the low level of county general fund contributions reflected disproportionately larger revenues contributed from other sources. If the college was receiving adequate funding from other sources, the county might feel justified in continuing its low contributions. In FY90, Prince George's County expended a total of $1,487,645,351. Of this amount, $36,998,802 went to the community college. By this method, PGCC received 2.5 percent of total Prince George's County expenditures for fiscal year 1990.

Table 6
General Fund Expenditures, Percentage Allocations
to Selected Functions, FY90

Function	Prince George's	Anne Arundel	Baltimore	Howard	Montgomery
Board of Education	37.1%	43.0%	39.7%	47.2%	46.4%
Public safety	17.4	20.1	16.8	14.2	14.0
General government	12.0	13.1	5.8	10.2	6.5
Debt service	6.7	9.5	6.3	7.9	9.3
Public works	6.1	5.8	9.7	7.9	8.7
Recreation/parks	5.7	1.7	1.6	2.3	5.1
Health	1.8	2.2	3.7	1.5	1.4
Libraries	1.7	1.7	2.2	2.0	1.8
Social services	1.3	0.4	1.0	2.1	2.8
Community college	1.1	2.2	3.5	2.2	2.5
Budget (millions)	**$793**	**$444**	**$828**	**$256**	**$1,175**

Similar calculations for the County and its peers for FY86-90 produce the following:

Table 7
Percentage of Total County Expenditures
Expended for Local Community Colleges

County	FY86	FY87	FY88	FY89	FY90
Baltimore	6.5	7.4	7.5	7.3	7.1
Anne Arundel	4.2	4.3	4.1	4.0	4.3
Montgomery	4.3	4.5	4.6	4.5	4.3
Howard	3.9	3.8	3.8	5.4	4.2
Prince George's	3.0	3.0	2.7	2.6	2.5

Inclusion of expenditures of restricted fund revenues did not change the central finding of the analysis: Prince George's County expended a substantially smaller share of its revenues on its community college than its peer counties expended on their community colleges.

Dissemination of the Analysis

The initial version of the above analysis was first shared in a confidential written report to the president in early February 1991. At the request of the president, it was shared with the president's cabinet the next day. The following week, the findings were shared with the Board of Trustees at a closed dinner meeting; the Board then asked that the same presentation be made at their public meeting which followed. The Board also asked that a similar analysis be made of state funding. Compared to county aid and student charges, state aid contributions were found to be relatively similar across peer colleges and relatively stable over the study period. Variation in county aid explained more of the variation in budget and tuition levels than state aid differences.

Following its disclosure at the open Board meeting, the analysis was shared with several campus divisions at the request of PGCC administrators who wanted their employees to gain a better understanding of the county's support for the college. By the end of February, the findings were well known on campus. However, immediate dissemination off campus was not authorized, reflecting the sensitive nature of ongoing budget discussions, continuing uncertainty as to eventual state cuts to the college and the county, and concern that release of the information might be perceived as confrontational. The first off-campus release of the information was a mention of the existence of the analysis in a reply to a letter from a state senator concerning our tuition level. No data were shared, only the central finding that the county's support was historically low compared to its neighboring peers. Although some administrators argued for full publication of the data in the college's major public relations print piece aimed at county and state policy makers (the college's *Master Plan*), the president decided against this. Instead, he authorized one sentence under the document's planning assumptions section: "Prince George's County will continue to provide a lower level of community college support than nearby peer jurisdictions."

The law requiring the college to provide a special cost analysis report to the state legislature provided a rationale for full public release of the county aid analysis. Using this legislative attack on the college to its advantage, the college included the entire comparative county aid analysis in the report submitted to Annapolis at the end of August, 1991. Once this decision had been made, the Board of Trustees asked for a meeting with the County Executive so the complete information could be presented to him in person. In September the director of institutional research made a formal presentation to the County Executive and his staff in the Executive's conference room in the county office building. The tone was informational, not confrontational, and set in the context of the state reporting requirement. After this meeting, the college decided to share the findings widely. Three tables of comparative data were included in the 1992 edition of the college's *Master Plan*. The development office was authorized to use the information where appropriate in its fundraising efforts.

An Institutional Research Success Story

Dissemination of the comparative county funding analysis succeeded in defusing the high tuition charge, by deflecting most criticism away from the college and to the historically low level of county support. Legislators and students came to understand that differences in student charges reflected differences in county aid. County budget staff privately acknowledged that a planned cut in the county's contribution to the college was averted because of the persuasive case made by the college that the county had consistently underfunded it in the past.

What lessons can institutional researchers learn from this example? The following suggestions come to mind as a result of this case study:

1. Stay attuned to the external and internal environments. You need to know the decisions facing top management, and the contexts in which the decisions are to be made. Pay attention to campus politics as well as relations with external actors. Be alert for opportunities, and recognize that the timing of your contribution may be crucial to its success.

2. Be proactive--take the initiative. Once you identify an opportunity where research findings might be especially pertinent and influential, go forward. While you must be sensitive to protocol and personalities, if you are confident in your research and its potential contribution, pursue it to completion and ensure its findings reach the appropriate people.

3. Consider library research. There's more to institutional research than running SPSS and doing surveys. Be open to different approaches and seek out new data sources. A specific recommendation: get to know what's available in the legislative services library in your state capital.

4. Keep data analyses simple. This is Middaugh's "fourth commandment" (Michael F. Middaugh, A Handbook for Newcomers to Institutional Research, NEAIR IRIS No. 2, p. 23) and this case study demonstrates the value of its advice. Particularly

when dealing with external audiences, simple analyses comprehensible to non-specialists are advantageous. Obviously, you must use techniques appropriate to the task. But choosing a sound method that is also easy to present to your target audience can increase the effectiveness of your research.

5. Turn reporting burdens to your advantage. External reporting is usually the part of the job least enjoyed by institutional researchers, with good reason. But as the leverage provided by the required cost report in this case study demonstrates, occasionally you can change a compliance exercise into a positive experience for your institution.

6. Get lucky. Sometimes the data tell the story by themselves. While data ambiguity typically provides room for alternative interpretations, sometimes you uncover information that is clear-cut and especially pertinent to the issue of the day. You won't get this lucky often unless you are regularly tilling virgin ground.

A Financial-Risk Indicator Model: The Ability to Predict Attrition and the Ability to Pay

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Abstract

The viability of a tuition-driven college is closely linked to the financial risks it takes with each entering class. At a relatively small institution (1,000 FTE's) a slight movement in the college's retention numbers or account receivables can cost or benefit an institution dramatically. At an institution that has a "rolling admission" policy, it becomes more imperative that a financial risk indicator system be developed whereby the institutional administrators can make a sound decision on whether or not to enroll a specific student who enters the institution with an outstanding account balance. This report details how a financial risk indicator system can be developed and implemented.

"...Money changes everything..."
Cyndi Lauper

Introduction

Enrollment numbers often serve to dictate the success or failure of a tuition-driven institution. In reality, it is the real revenues produced by these enrollments that determine institutional viability. Two variables that serve to impact revenues are persistence patterns and account receivables. Given the lingering economic downturn in the Northeast region, the soaring costs of higher education, the lessening of both federal and state student grant aid dollars, and the tightening of credit by lending institutions, it is more and more difficult for students with limited financial means to afford a college education. With loans replacing grants as the monetary foundation for higher education, it behooves an institution to ensure that students have both the desire and the ability to pay for their education. This paper focuses attention on two important issues that impact revenue generation: *persistence* and the *ability to pay*.

As with many institutions, a certain amount of students enroll in the college only to withdraw before graduation. There are many reasons for a student withdrawing including academics, campus atmosphere, and costs. In all instances, when a students fails to persist, the institution suffers a loss in revenue. It is imperative that institutional administrators understand the multiple reasons why students withdraw. Similarly, these administrators should develop and implement specific policies to ensure that a larger percentage of its students persist through graduation.

A core aspect of this paper is to develop a model that will allow an institution to identify students who are less likely to persist into their second year and/or will have an outstanding balance with the college by the start of their second year. This latter point underscores the problem facing a lot of institutions -- how can an institution identify students who are not fully able to pay for education already received -- in other words, students who will occupy a spot on the institution's account receivable ledger. In many tuition-driven institutions, account receivables can account for a sizable percent of the total revenues generated. By minimizing these account receivables, an institution can allocate its resources more effectively. If a statistical model can predict a student's proneness to having an unpaid balance then the following question can be posed: would an institution be better served if it chose to allocate more monies in financial aid by reducing the dollars it has to allocate toward bad debt? This paper reveals how this institution began to develop a financial aid risk indicator model. This report also reveals how well this simple model predicts unpaid first-year balances.

Methodology

The population used in this study involves 377 Fall, 1991 freshman entrants who were accepted to the institution after January 1, 1991. This number constitutes 70% of the total freshman class.[1] These students attend a relatively small private, career-oriented two-year college situated outside a major city in the Northeast region. Its well-honed image stresses *hands-on* training with a solid foundation of liberal art courses. Its tuition is considered moderately high as compared with its competitors; however, tuition costs are of considerable importance to its students who, as a majority, come from first generational college families.

The aim of this study is to identify several pre-enrolling variables that can serve to identify students who either will not persist into their second year at the institution or will begin the second year with an outstanding balance. Seven variables were identified: gender, housing status, account balance (balance owed on 9/1/92), first year institutional scholarship awarded, first year loan amount, first year financial aid need gap amount, and admission rating.

From the onset, the goal was to develop a parsimonious financial-risk model that would enable administrators to better service students. To develop this model, four hypotheses were constructed and tested.

- Students who receive $1,500 or more in institutional scholarship dollars will persist at a higher rate than students who receive less than $1,500 in institutional scholarship dollars.

- Students who do not participate in a loan program will persist at a higher rate than students who do finance their education through a loan program.

- Students who have a financial aid need gap of less than $2,500 will persist at a higher rate than students who have a financial aid need gap of $2,500 or more.

- Students with high admission ratings (6-10) will persist at a higher rate than students with low admission ratings (1-5.5).[2]

In accordance with these four hypotheses, a simplified financial-risk scale was constructed. Each student was assigned a numerical score that ranged from 0 through 4. The assumption was that the higher the score, the less financial risk would be taken by the institution. Given the above hypotheses, the following scores were assigned:

- 1 point: Institutional Scholarship $1,500 or higher,
- 1 point: Student does not participate in loan program,
- 1 point: Financial Aid need gap less than $2,500, and
- 1 point: Assigned an admission rating of 6 or higher.

Subsequently, students with 0 points are designated as *high-risk* (22% of students), students with 1 or 2 points are designated as *moderate-risk* (50% of students), and students with 3 or 4 points are designated as *low-risk* (28% of students).

Along with the four above hypotheses, other indicator variables were analyzed using the following codes: gender (male, female), housing status (housing, no housing), and the two independent variables, account balance (no balance and balance), and persistence status (enrolled and drop out).[3] These additional variables are used to explore the nuanced differences within the pre-enrollment financial data.

A variety of statistical tests have been incorporated into this analysis. They include: chi-square, t-test, ANOVA, logistic regression, and CHAID -- the latter is a statistical technique that looks for interaction between ordinal or nominal level data. The independent variables used in this study include persistence status and account balance status.

Table 1: 1st Year Persistence/Balance Status by Four Predictor Variables, Gender and Housing

	Persistence Status		Balance Status		
Status	**Dropout**	**Persisted**	**No Balance**	**Balance**	**Total**
Institutional Scholarship[1]					
LT $1,500	130	154	130	154	284
%	46	54	46	54	75
GE $1,500	25	68	44	49	93
%	27	73	47	53	25
Need Gap[2]					
GE $2,500	145	187	156	176	332
%	44	56	47	53	88
LT $2,500	10	35	18	27	45
%	22	78	40	60	12
Loan Status[3]					
Loan Taken	78	139	88	129	217
%	36	64	41	59	58
No Loan Taken	77	83	86	74	160
%	48	52	54	46	42
Admission Rating[4]					
1-5.5	115	149	117	147	264
%	44	56	44	56	70
6-10	40	73	57	56	113
%	35	65	50	50	30
Gender[5]					
Female	87	108	93	102	195
%	45	55	48	52	52
Male	68	114	81	101	182
%	37	63	45	55	48
Housing Status[6]					
No Housing	99	148	112	135	247
%	40	60	45	55	66
Housing	56	74	62	68	130
%	43	57	48	52	35
Total	155	222	174	203	377
%	41	59	46	54	

Chi-Square Results:

1	Persistence; significant, p. < 0.001.	Balance; not significant, p. < 0.796.
2	Persistence; significant, p. < 0.006.	Balance; not significant, p. < 0.376.
3	Persistence; significant, p. < 0.017.	Balance; significant, p. < 0.011.
4	Persistence; not significant, p. < 0.140.	Balance; not significant, p. < 0.275.
5	Persistence; not significant, p. < 0.153.	Balance; not significant, p. < 0.535.
6	Persistence; not significant, p. < 0.574.	Balance; not significant, p. < 0.664.

Data Analysis

Table 1, on the previous page, displays the results of several chi-square tests which test the above hypotheses. In general, the hypotheses are generally supported. Only the hypothesis regarding admission rating and persistence is not fully supported. Relatively large proportional differences are found in regard to institutional scholarship and persistence as well as between need gap and persistence. In general, a disproportionate number of students who receive either large institutional scholarship dollars or have a need gap of less than $2,500, persist into their second year. There appears to be little, if any, significant relationships between gender or housing status with persistence status.

Table 1 also analyzes these variables in regard to whether or not there is a relationship between the various components of the financial-risk model and account balances with the institution. In only one instance, loan status, was a significant difference noted. Those students who have taken a loan to pay for their education are more likely to have an account balance. Interestingly enough, those students who have taken loans are disproportionately more likely to persist into their second year than are students who chose not to take a loan.

Table 2 presents the cross tabulation results of the financial-risk model with persistence status and balance status. Coupled with the findings shown in Table 1, the results here begin to reveal whether the financial-risk model developed adequately identifies students who fail to persist and/or who have a financial balance with the institution. In support of this model, a statistical difference is noted between risk status and persistence as well as between risk status and balanced owed. In regard to persistence, the financial-risk model shows that a disproportionate number of *high-risk* students drop out while a disproportionate number of *low-risk* students persist.

Table 2 also suggests that this financial-risk model gives a good indication of whether a *high-risk* student will owe the institution money after the first year of study. 70 percent of these students will owe the institution money -- a much higher percentage than those seen in either the *moderate-risk* or *low-risk* student categories. A preliminary conclusion can be drawn: *high-risk* students are more likely to fail to persist and more likely to have an account balance with the institution.

Table 2: 1st Year Persistence and Balance Status by Risk Category

Risk Status	Persistence Status[1]		Balance Status[2]		
	Dropout	Persisted	No Balance	Balance	Total
High	42	39	24	57	81
%	52	48	30	70	22
Moderate	77	113	99	91	190
%	40	60	52	48	50
Low	36	70	51	55	106
%	34	66	48	52	28
Total	155	222	174	203	377
%	41	59	46	54	

[1] chi-square test significant, p. < 0.047.
[2] chi-square test significant, p. < 0.003.

Table 3 provides the formal linkage between persistence rates and account balances. The data indicate that account balances do not vary proportionately among students who persist; however, among students who fail to persist into their second year, the data clearly indicate that a disproportionate number of *high-risk* students have account balances while a disproportionate number of *low-risk* students do not have account balances. This point is a subtle but important distinction from the previous table's findings. Table 3 illustrates that a large percentage of all students who persist have an outstanding account balance. Yet, when the focus is strictly on students who dropped out, it is only the *high-risk* student that has a high percentage of outstanding account balances.

This finding suggests that the financial-risk model may have some utility in identifying those students who will both drop-out and have an outstanding account balance. The converse finding is true among students classified as *low-risk*.

Table 3: 1st Year Balance Status by Risk Category Controlling for Persistence Status

Risk Status	Persisted[1]		Drop Out[2]		
	No Balance	Balance	No Balance	Balance	Total
High	11	28	13	29	81
%	28	72	31	69	22
Moderate	50	63	49	28	190
%	44	56	64	36	50
Low	24	46	27	9	106
%	34	66	75	25	28
Total	85	137	89	66	377
%	38	62	57	43	

[1] chi-square test not significant, p. < 0.146.
[2] chi-square test significant, p. < 0.0001.

Table 4, on the following page, presents a t-test analysis performed on five variables as they relate to financial-risk status. They include: institutional scholarship, financial aid need gap, loan status, admission rating and account balance. This table reveals that among the population at large, statistical differences emerge in regard to institutional scholarships, loans and admission rating. On average, those students who persist received more institutional scholarship dollars, took out more loan dollars and received a higher admission rating as compared with their non-persisting cohort. Important differences also emerged between these two groups of students when analyzed by the three financial-risk categories.[4]

Among *high-risk* students there was little difference in the amount of institutional scholarships given. Yet, as footnote #4 indicates, these students received significantly less institutional scholarship dollars than their less risky counterparts. These students are clearly financially burdened. They have very large need gaps (statistically significant between persisters and drop outs) but they also have, on average, large loan amounts. It is not surprising that among this group of students the ones who persist are those with relatively smaller need gaps and a smaller account balances. They have somehow managed to find alternative resources to cover the gap.

Table 4
T-Test Analysis
Key Factors by Risk and Persistence Status

Key Factors Risk Categories	Institutional Scholarship *Average*	Financial Aid Need Gap *Average*	Loan Status *Average*	Admission Rating *Average*	Balance Status *Average*
Overall	$1,029	$3,151	$1,893	4.88	$1,060
Drop Out: N=155	$726	$3,487	$1,528	4.66	$976
Persist: N=222	$1,241	$2,916	$2,133	5.03	$1,119
t-value	*t = -3.79*	t = 1.41	*t = -2.89*	*t = -2.17*	t = -0.74
High Risk	$424	$5,158	$2,943	3.90	$1,207
Drop Out: N=42	$338	$6,037	$2,797	3.83	$1,558
Persist: N=39	$519	$4,212	$3,101	3.97	$830
t-value	t = -1.52	*t = 2.06*	t = -1.11	t = -0.58	*t = 2.22*
Moderate Risk	$1,019	$2,709	$1,594	4.56	$953
Drop Out: N=77	$634	$2,486	$861	4.39	$855
Persist: N=113	$1,281	$2,861	$2,093	4.67	$1,020
t-value	*t = -3.01*	t = -0.71	*t = -4.68*	t = -1.32	t = -0.60
Low Risk	$1,510	$2,408	$1,627	6.20	$1,139
Drop Out: N=36	$1,378	$2,651	$1,561	6.21	$557
Persist: N=70	$1,578	$2,283	$1,659	6.20	$1,439
t-value	t = -0.81	t = 0.50	t = -0.21	t = 0.03	*t = -2.27*

Note: t-value in italics indicate statistical significance, p. < .05.

When the focus of attention turns to *moderate-risk* students the dynamics begin to change. It is only among this group of students where institutional dollars draw an important distinction between persisters and drop-outs. Not surprisingly, students who persist received on average more than double the amount of institutional dollars as compared with students who dropped out. Contrary to the hypothesis concerning loan status and persistence, it is clear that loans among this group of students are an indication of commitment. Students who persist took out, on average, over $1,600 dollars more in loans than their non-persisting counterparts. No other significant differences were noted within this group.

Low-risk persisters and drop-outs mirror each other in regard to scholarships, loans, need gap and admission ratings. The only instance where they differ significantly is in regard to their account balance: those who persist owe the institution nearly $1,000 more, on average, than do the *low-risk* students who drop out. This finding indicates that the account balance may be foreclosing other educational opportunities and, in fact, serves to enhance persistence.[5]

Charts 1 and 2 on the subsequent pages present the results of two CHAID analyses. This statistical technique is a *goodness-of-fit* test that identifies the item that best differentiates between the two groups within the predictive variable (e.g. persister or drop-out). For the purpose of this analysis, all of the predictive variables were classified into two groups (see footnote #2 for this discussion). Variables used in this analysis include financial-risk model, gender, housing status and the four predictor variables. In both analyses, the financial-risk model and gender did not lend further understanding to the issues at hand.[6]

Chart 1 focuses on the issue of account balances. As noted, 37% of these students did not have an account balance with the institution. The important aspect of this analysis is to determine what variables increase the likelihood of a student not having an account balance with the institution. In CHAID analysis, this determination is found by following the optimal *path* -- the path that lowers the percentage of students having an account balance.

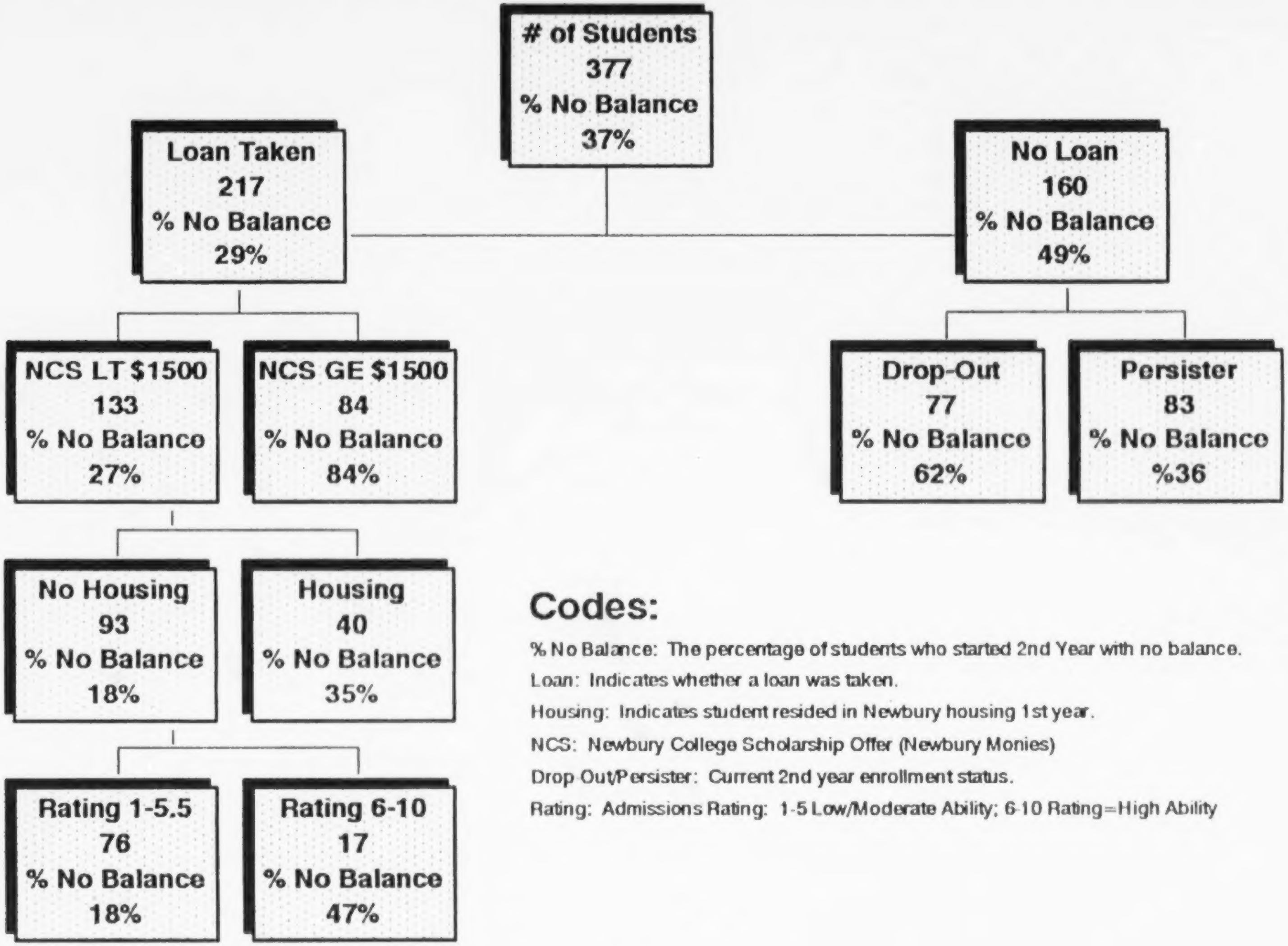
The variable that best differentiates students based on their account balance status is loans. 217 students received a loan -- 29% of these students do not have account balances. 160 students did not take out a loan and 49% of them do not carry an account balance. Clearly, if students do not take out a loan, the likelihood of having an account balance decreases.

If the focus of attention is on students who have taken out a loan, an interesting discovery is found. When the student receives an institutional scholarship of $1,500 or higher, the likelihood of having no account balance is 84%. The converse occurs when the scholarship amount is less than $1,500; the likelihood of not having a balance is 27%. This path suggests that if an institution wants to analyze its accounts receivable problem, it should focus attention on those students who have taken out a loan but have received relatively little institutional scholarship assistance. As noted earlier, an account balance may serve as a retention tool for some students. When a student has not taken out a loan, and they persist -- only 36% do not have an account balance. This percentage contrasts sharply with their no loan counterparts who drop out -- 62% of these students do not have an account balance.

Chart 2 switches attention to the issue of persistence. As noted, 59% of the 377 students included in this study persisted into the second year. The variable that best differentiates among these students is account balances. Of the 236 students who had an account balance with the institution, 66% persisted. However, among the 141 students who *did not* have a balance, only 47% persisted. A general conclusion seems to be in that students who do not have an account balance with the institution have more options available to them.

Lastly, Chart 2 underscores the importance of institutional scholarship dollars. The persistence rate rises to 78% among students who have an account balance and have received an institutional scholarship of $1,500 or higher. Still, even among those who do not receive this amount of money, if the institution can find ways to lower the students need gap to less than $2,500 the persistence rate rises to 86%.

Chart 1
Pre-Admission Factors Predicting 2nd Year Balance: Fall 1991 Entrants


# of Students
377
% No Balance
37%
Loan Taken
217
% No Balance
29%
No Loan
160
% No Balance
49%
NCS LT $1500
133
% No Balance
27%
NCS GE $1500
84
% No Balance
84%
Drop-Out
77
% No Balance
62%
Persister
83
% No Balance
%36
No Housing
93
% No Balance
18%
Housing
40
% No Balance
35%
Rating 1-5.5
76
% No Balance
18%
Rating 6-10
17
% No Balance
47%

Codes:

% No Balance: The percentage of students who started 2nd Year with no balance.

Loan: Indicates whether a loan was taken.

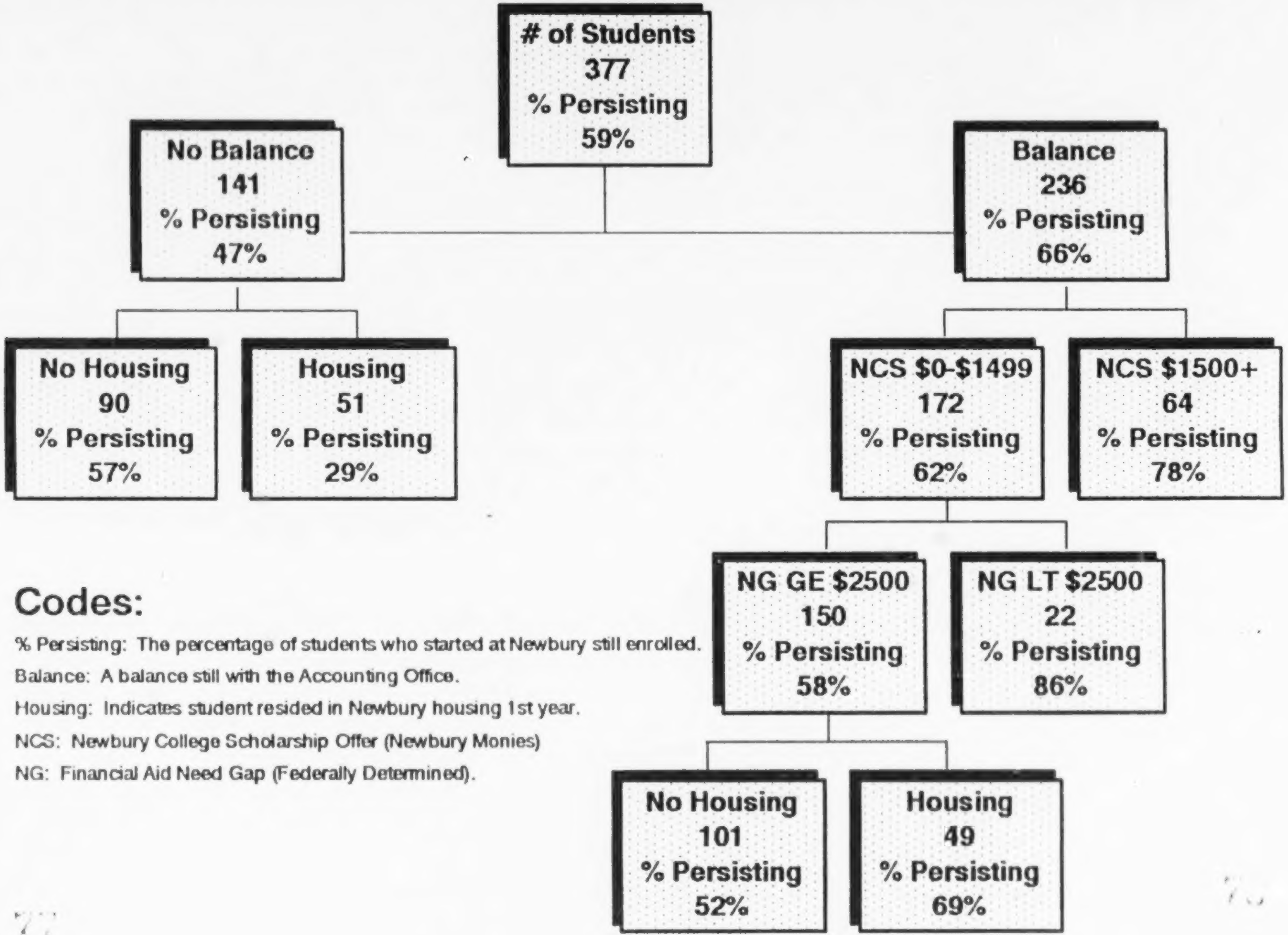
Housing: Indicates student resided in Newbury housing 1st year.

NCS: Newbury College Scholarship Offer (Newbury Monies)

Drop-Out/Persister: Current 2nd year enrollment status.

Rating: Admissions Rating: 1-5 Low/Moderate Ability; 6-10 Rating=High Ability

Chart 2
Pre-Admission Factors Predicting Persistence: Fall 1991 Entrants


# of Students
377
% Persisting
59%
No Balance
141
% Persisting
47%
Balance
236
% Persisting
66%
No Housing
90
% Persisting
57%
Housing
51
% Persisting
29%
NCS $0-$1499
172
% Persisting
62%
NCS $1500+
64
% Persisting
78%
NG GE $2500
150
% Persisting
58%
NG LT $2500
22
% Persisting
86%
No Housing
101
% Persisting
52%
Housing
49
% Persisting
69%

Codes:

% Persisting: The percentage of students who started at Newbury still enrolled.

Balance: A balance still with the Accounting Office.

Housing: Indicates student resided in Newbury housing 1st year.

NCS: Newbury College Scholarship Offer (Newbury Monies)

NG: Financial Aid Need Gap (Federally Determined).

Discussion and Conclusion

The four pre-admission variables selected for inclusion in the financial-risk model seem to be able to identify a certain type of student who is prone to either dropping out of the institution and/or having an outstanding account balance. The data are not clear in regard to the relationship between account balances and persistence. There is indication that, at least among *low-risk* students, that an account balance may even be a discrete retention tool.

The use of a solid loan program does not seem to impede *moderate-risk* students -- especially if it is coupled with an adequate institutional scholarship. Investment, it seems, is made by both sides in this instance. This finding is important given that the largest number of students are represented in this category.

What is evident in this analysis is that *high-risk* students are at a disadvantage -- they have very large need gaps, are academically weaker as evidenced by their low admission ratings and are heavily debt laden. These three elements combined can weave a very believable story about a student failing to persist and/or having a large account balance.

A goal of any institution is to recruit and graduate quality students. Any potential blocking mechanism to graduation needs to be addressed. High attrition rates and large account balances serve neither the student or the institution well. The development of a financial-risk model addresses this issue directly.

Although the development of a financial-risk model is still in its infancy stage, a tool of this nature can help an institution identify students who will most likely need assistance. This assistance has to be in terms of financial planning, academic counseling and, most importantly, financial grant programs that will lower the students' need gap and encourage persistence.

Footnotes

[1] An admission rating system policy was adopted at the beginning of the calendar year. All accepted students were assigned a rating based on their academic background, commitment to the field of interest, interview and letters of recommendation.

Given that only 377 of the 542 enrolled students are analyzed in this report it is important to note that the institution's freshman to sophomore persistence rates are significantly higher. At this institution the earlier applicants are traditionally the College's best students, both in terms of academic performance and in terms of persistence. Among this group of students, 41% failed to persist into their second year. Overall, the College retained nearly 70% of its enrolled, Fall 1991 freshman class.

[2] The four hypotheses listed above also serve as the definitional break points for subgroup analyses.

[3] Two points should be noted. The balance a student owes the institution is only treated as a dichotomous variable when the statistical technique demands its. In other instances it is treated as a continuous variable.

Another interesting variable not analyzed in this paper is the month a student deposits. Cursory analysis indicates that there is no difference in either the persistence pattern or balance status between students who place an admission deposit with the institution early or late into the admission cycle. The only exception to this finding is students who pay a deposit during the week of registration -- they drop out at a much higher rate and are more prone to owing the institution money.

[4] Although not displayed, an ANOVA was performed on the four predictor variables with risk status being the treatment variable. In all four instances, significant group differences were found. Using the Tukey-HSD paired comparison statistic, the following results were reported:

> Institutional Scholarships; *high-risk* students received significantly less dollars than their cohorts. *Moderate-risk* students received significantly less than *low-risk* students.
>
> Financial Aid Need Gap; *high-risk* students have a significantly higher need gap as compared with both their *moderate-risk* and *low-risk* counterparts.
>
> Loan Amount; *high-risk* students take out significantly higher loan amounts as compared with *moderate-risk* and *low-risk* students.
>
> Admission Ratings; *high-risk* students received significantly lower admission ratings as compared with both *moderate-risk* and *low-risk* students. Similarly, *moderate-risk* students receive a significantly lower admission rating as compared with *low-risk* students.

[5] Logistic regression was performed using persistence status as the predictive variable. After using a backwards variable selection technique, only three variable independent variables remained in the equation (Loan Amount, Institutional Scholarship, and Need Gap). The financial risk variable was forced into the statistical model.

Overall the classification table correctly predicted 66% of the cases. 90% of the persisters were correctly classified while only 30% of the drop-outs were properly classified. This relatively high *false-positive* level needs to be addressed.

The overall prediction equation reveals a persistence probability of 0.643. When controlling for risk status the model reveals a 0.61 persistence probability for high-risk students, 0.63 for moderate-risk students and a 0.71 for low-risk students.

[6] This report does not go into any detail on CHAID analyzes where the financial risk model served as a controlling variable. This analysis reveals different paths for each risk category.

Validity of Admission Characteristics in Predicting Performance in Academic Coursework

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Introduction

Validity studies represent one type of research study designed to evaluate how well the admission process selects and assesses the potential success of applicants to a given college; these studies examine the degree to which criteria employed in the admission process predict students' academic performance in college. Typically, validity studies have used the freshman grade point average as the criterion variable. It has generally been assumed that the freshman average provides a reliable basis for comparing the academic performance of all students. However, as Ramist, Lewis and McCamley (1990) observe, there are compelling reasons to question this assumption. The difficulty level of courses may range from remediation to advanced. Grading practices may differ from instructor to instructor. Course requirements differ and student course loads may vary substantially.

The purpose of this paper is to present the rationale, methodology, and results of a validity study that departed from the traditional approach of using the freshman grade point average and instead used performance in specific types of academic courses as the criterion variable. More specifically, this study investigated whether or not the relationship between High School Rank, SAT Scores and course grades would differ significantly by the difficulty level and content of the courses. Questions implicit in this research were: Are the SAT's or High School Rank better predictors of students' performance in more difficult courses compared with easier courses? Do the SAT Verbal and SAT Math scores differentially predict students' performance in language-related or math-related courses?

Data Source and Method of Analysis

In the context of this study, academic courses are classified both by level of difficulty, as 'More Challenging' and 'Less Challenging' and by content, as 'More Challenging Language Oriented' and 'More Challenging Quantitatively Oriented' courses. A Total of 36 undergraduate courses, offered during one academic semester, were included in the study; 18 courses were classified as 'More Challenging' and 18 courses were classified as 'Less Challenging'. The classification of courses was based on a technical definition as well as on judgmental confirmation by senior academic administrators. Technically, 'More Challenging' courses included those in which the mean grade given was no more than 0.1 higher than the mean GPA of all students in the course, and the 'Less Challenging' courses included those in which the mean grade given was at least 0.4 higher than the mean GPA of all students in the course.

Correlational and regression analyses were employed to examine the relationship and predictive validity of High School Rank and Sat Scores in relation to performance in different types of courses.

Results

Data from this research study provide evidence of a substantial relationship between High School Rank, SAT Scores and grades in many More Challenging courses; the majority of all coefficients range between .30 and .71.

Particularly impressive findings from the correlational analyses include: the consistent pattern of positive and significant relationships between SAT Scores and grades in most courses; the substantial relationship between SAT Verbal scores and grades in selected English courses; the relatively high correlations between SAT Math Scores and grades in several quantitatively oriented courses, such as, Micro-Economics, Management and Operations, Sensory Psychology and Educational Measurement; and the high proportion of substantial correlations between Total SAT Scores and grades in a range of courses offered in different disciplines and in different schools.

In contrast with the pattern of significant relationships found between SAT scores and grades in More Challenging courses, results reveal very few positive, significant relationships between SAT Scores, High School Rank and grades in Less Challenging courses. The majority of all coefficients are below .30 and very few are statistically significant.

Table 1 documents the differences in the magnitude of the correlation coefficients between SAT Scores, High School Rank and grades in More and Less Challenging courses. As illustrated, 14 of the 18 coefficients for the Verbal SAT Score are above .30 for the More Challenging courses whereas 15 of the 18 coefficients are below .30 for the Less Challenging courses. A similar differential pattern exists with respect to the Total SAT Scores and High School Rank. Further comparative analysis also reveals that 19 of the coefficients for More Challenging courses, compared with only 3 of the coefficients for Less Challenging courses, are .50 or higher.

Table 1

Classification of the Magnitude of Correlation
Coefficients Between SAT Scores and Course Grades
by Type of Course

SAT Scores	Course Type	Classification of Coefficients			
		Negative	.00 - .29	.30 - .49	.50 - 71
VERBAL					
	More Challenging	1	3	10	4
	Less Challenging	2	13	2	1
MATH					
	More Challenging	1	7	6	4
	Less Challenging	3	11	3	1
TOTAL					
	More Challenging	1	2	10	5
	Less Challenging	1	12	5	0
HIGH SCHOOL RANK					
	More Challenging	1	3	8	6
	Less Challenging	3	11	3	1

The overall correlations between SAT Scores, High School Rank and course grades also differ significantly by type of course. As illustrated in Table 2, the correlations between SAT Scores, High School Rank and grades are consistently higher for More Challenging courses; .32 for the SAT Verbal Score, .26 for the SAT Mathematical Score, .34 for the Total SAT Score and .31 for High School Rank. In contrast, the correlations for Less Challenging courses are .17 for the SAT Verbal Score, .16 for the SAT Mathematical Score, .19 for the Total SAT Score and .18 for High School Rank. Differences between the correlations by type of course are statistically significant at the .01 probability level for the SAT Verbal Score, the Total SAT Score and High School Rank and at the .05 level for the SAT Mathematical Score.

Table 2

Correlations Between SAT Scores, High School Rank and Course Grades by Type of Course*

	Less Challenging Courses	More Challenging Courses	All Courses
SAT Verbal	.17	.32	.19
SAT Mathematical	.16	.26	.16
Total SAT	.19	.34	.20
High School Rank	.18	.31	.20

* The SAT correlations are based on an N of 731 for Less Challenging courses, an N of 641 for More Challenging courses and an N of 1372 for all courses combined. The High School Rank correlations are based on an N of 619 for Less Challenging courses, 508 for More Challenging courses and 1127 for all courses combined.

Analyses presented thus far demonstrate clearly that the relationship between SAT Scores, High School Rank and grades differs significantly according to the level of the course. Further analyses were conducted to determine the relative power of SAT Scores and High School Rank in predicting grades in More Challenging, Less Challenging and All courses combined.

Three separate regressions were conducted first for All courses, secondly for More Challenging courses, and finally for Less Challenging courses. Each regression included two independent variables - High School Rank and the SAT Verbal Score, the SAT Mathematical Score or the SAT Total Score. Additional analyses also were conducted examining the effects of High School Rank and the SAT Verbal Score on grades in More Challenging, Language Oriented courses and the effects of High School Rank and the SAT Mathematical Score on grades in More Challenging, Quantitatively Oriented courses.

Stepwise regression results reveal a statistically significant, though small, effect of High School Rank and SAT Scores on grades in All courses combined. As indicated by an R Square Coefficient of .04, High School Rank explains four percent of the variance. With High School Rank in each equation, the Verbal, Mathematical, or Total SAT Scores explain an additional one percent of the variance in grades.

Compared with the results for All courses combined, regression results reveal a stronger relationship between grades in More Challenging courses and both High School Rank and SAT Scores. For All courses combined, High School Rank and SAT Scores explain only five percent of the variance in grades, whereas for the More Challenging courses, these two measures explain from 12 to 15 percent of the variance in grades.

Separate regression results for the More Challenging courses reveal that, with High School Rank and Verbal SAT Scores in the equation, High School Rank explains ten percent of the variance in grades and the SAT Scores explain an additional 5 percent. With High School Rank and SAT Mathematical Scores in the equation, High School Rank explains 10 percent of the variance in grades and the SAT Mathematical Scores explain an additional two percent of the variance. The Total SAT Score has a more powerful effect than either the SAT Verbal Score or the SAT Mathematical Score. With the Total SAT Score and High School Rank in the equation, the Total SAT Score explains 10 percent of the variance in grades in More Challenging courses and High School Rank explains an additional 5 percent of the variance.

Similar to the correlational results presented earlier, the effects of High School Rank and SAT Scores are considerably smaller with regard to grades in Less Challenging courses. Results from three separate regressions show that High School Rank and any one of the SAT Scores explain only four to five percent of the variance in grades. With the Verbal or Mathematical SAT Score in the equation, High School Rank explains only three percent of the variance in grades and the Verbal or Mathematical SAT Scores explain only an additional one percent of the variance. With the Total SAT Score in the equation, the order is reversed. The Total SAT Score explains three percent of the variance and High School Rank explains an additional two percent of the variance in grades in Less Challenging Courses. Given the relatively weak effects for both High School Rank and SAT Scores, no further analyses were conducted regarding grades in Less Challenging courses.

Further analyses were conducted, however with grades in the More Challenging courses. Based on the pattern of relationships found in the correlational analyses, separate regressions were conducted predicting grades in More Challenging, Language Oriented Courses from High School Rank and the SAT Verbal Score and predicting grades in More Challenging Quantitatively Oriented Courses from High School Rank and the SAT Mathematical Score. Each of the 18 More Challenging courses were classified in one of these two groups. The Language Oriented courses included courses in English, Romance Languages, Sociology, Theology and Education. The quantitatively oriented courses included courses in Chemistry, Economics, Mathematics, Computer Programming, Finance and Educational Measurement.

Although the courses in each category reflect a variety in content, the assumption underlying this classification is that verbal abilities relate more to performance in the Language Oriented courses and mathematical abilities relate more to performance in courses defined as Quantitatively Oriented.

Stepwise regression results, presented in Table 3, indicate that High School Rank and SAT Verbal Scores have statistically significant, positive effects on grades in More Challenging, Language Oriented courses. As indicated by an R Square Coefficient of .17, High School Rank explains 17 percent of the variance in grades in More Challenging, Language Oriented courses. With High School Rank in the equation, SAT Verbal Scores explain an additional 7 percent of the variance in grades. In terms of standard units, the Beta Coefficient of .35 indicates that for every one unit change in High School Rank, there is a corresponding .35 unit change in grades. Similarly, for every one unit change in SAT Verbal Scores, there is a corresponding .28 unit change in grades. These effects are statistically significant.

The magnitude of the R Square and Beta Coefficients shows that the effect is relatively larger for High School Rank than for SAT Verbal Scores. High School Rank and SAT Verbal Scores together bear a moderately strong relationship to grades in More Challenging, Language Oriented courses. The Multiple R correlation coefficient is .50. Taken together, High School Rank and SAT Verbal Scores explain 24 percent of the variance in grades in More Challenging, Language Oriented courses. The F ratio for the total equation is 37.98, significant at the .001 level.

Stepwise regression results also show that SAT Mathematical Scores and High School Rank have statistically significant, positive effects on grades in More Challenging, Quantitatively Oriented courses. As indicated by the R Square and Beta Coefficients, the effect is relatively larger for SAT Mathematical Scores in comparison with High School Rank. The R Square Coefficient of .11 shows that SAT Mathematical Scores explain 11 percent of the variance in grades in More Challenging, Quantitatively Oriented courses. With SAT Mathematical Scores in the equation, High School Rank explains an additional 5 percent of the variance in grades.

Reflecting the effect in standard units, the Beta Coefficient of .26 shows that for every one unit change in SAT Mathematical Scores, there is a corresponding .26 unit change in grades in More Challenging, Quantitatively Oriented courses. Similarly, for every one unit change in High School Rank there is a corresponding .24 unit change in grades in More Challenging, Quantitatively Oriented courses.

SAT Mathematical Scores and High School Rank together bear a moderate relationship to grades in More Challenging, Quantitatively Oriented courses. The Multiple R Correlation Coefficient is .41. SAT Mathematical Scores and High School Rank together explain 16 percent of the variance in grades in More Challenging, Quantitatively Oriented courses. The F ratio for the total equation is 26.70, significant at the .001 level.

Table 3

Results from Stepwise Regression Analyses of the Effects of High School Rank and SAT Verbal Scores on Course Grades in More Challenging, Language Oriented Courses

ORDER OF ENTRY	INDEPENDENT VARIABLE	BIVARIATE r	MULTIPLE R	R SQUARE	R SQUARE CHANGE	BETA COEFFICIENT	STANDARD ERROR OF BETA	t RATIO
1	High School Rank	.41	.41	.17	.17	.35	.06	5.91 ***
2	SAT Verbal Score	.36	.50	.24	.07	.28	.06	4.80***

The F ratio for the total equation is 37.98 (df(2,232); p< .001)

*** p < .001

Table 4

Results from Stepwise Regression Analyses of the Effects of High School Rank and Math SAT Scores on Course Grades in More Challenging, Quantitatively Oriented Courses

ORDER OF ENTRY	INDEPENDENT VARIABLE	BIVARIATE r	MULTIPLE R	R SQUARE	R SQUARE CHANGE	BETA COEFFICIENT	STANDARD ERROR OF BETA	t RATIO
1	SAT Mathematics Score	.33	.33	.11	.11	.26	.06	4.43 ***
2	High School Rank	.32	.41	.16	.05	.24	.06	4.21***

The F ratio for the total equation is 26.70 (df(2,270); p< .001)

*** p < .001

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Summary and Conclusion

Results from this research reveal moderate to strong statistically significant relationships between admission criteria and performance in certain academic courses. Further, these results show that the strength of the relationship varies by the difficulty level of the course and that the SAT Verbal Score may be more useful in predicting students' performance in language oriented courses while the SAT Mathematics Score may be more useful in predicting students' performance in quantitatively oriented courses.

Correlational and regression analyses both document differences, by difficulty level and course content, in the relationship between SAT Scores, High School Rank and course grades. Correlations are close to .30 for the More Challenging courses combined compared to approximately .20 for the Less Challenging courses combined. Analysis at the individual course level reveals even more impressive evidence of the effect of the type of course on the correlations between SAT Scores, High School Rank and course grades. Many of the correlations for the More Challenging courses are above .50 while very few of the correlations for the Less Challenging courses are above .50.

Results from regression analyses also reflect the effect of the type of course on the relationship between SAT Scores, High School Rank and course grades. High School Rank and the SAT Verbal, or the SAT Mathematical or the Total SAT Score explain only 5 percent or less of the variance in grades in all courses combined or in Less Challenging courses. In contrast, High School Rank and the SAT Scores explain between 12 and 15 percent of the variance in grades in More Challenging courses.

The effect of SAT Scores on course grades is much more evident when separate analyses are conducted between High School Rank, SAT Verbal Scores and grades in More Challenging, Language Oriented courses, and between High School Rank, SAT Mathematical Scores and grades in More Challenging, Quantitatively Oriented courses. High School Rank and SAT Verbal Scores together explain 24 percent of the variance in grades in More Challenging, Language Oriented courses. High School Rank explains 17 percent of the variance. With High School Rank in the equation, SAT Verbal Scores explain an additional 7 percent of the variance in grades in these courses. SAT Mathematical Scores and High School Rank together explain 16 percent of the variance in grades in More Challenging, Quantitatively Oriented courses. The SAT Mathematical Scores explain 11 percent of the variance With SAT Mathematical Scores in the equation, High School rank explains an additional 5 percent of the variance in grades in these courses.

These results emphasize the importance of considering the quality of the criterion, i.e., course grades, when evaluating the predictive power of admission criteria. This study also demonstrates that SAT Scores and High School Rank are much better predictors of grades in More Challenging courses compared with either All courses combined or with Less Challenging courses. Perhaps the most interesting finding is the significant relationship that exists between the SAT Mathematical Scores and grades in More Challenging, Quantitatively Oriented courses and between SAT Verbal Scores and grades in More Challenging, Language Oriented courses.

Further, the significant relationship between SAT Scores and grades in related courses suggests that SAT Scores are potentially useful predictors of students' performance in specific major fields of study. For example, the SAT Mathematical Scores may be helpful predictors of students' performance in such major fields as Mathematics, Economics, Chemistry, and Computer Science. In general, these results suggest that both SAT Scores and High School Rank ought to be considered in predicting students' performance in academically challenging courses and programs of study.

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Integrating Strategic Planning and Facilities Planning in a Comprehensive Public University

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Abstract

Planning in higher education is relatively new. The earliest attempts at formal planning, including physical master planning, began with the enrollment boom of the 1960s. Planning during the past three decades has at various times meant long range planning, master planning, contingency planning, systematic planning, program planning, tactical planning, and strategic planning (Winstead & Ruff, 1986). Although many institutions are engaged in one or more of these processes, few have attempted to integrate them. This paper will describe the advantages of linking academic and strategic planning with facilities planning, and discuss the implications for universities. A case study of a public institution will be profiled.

Introduction

Over the past three decades planning in higher education has evolved to meet the changing needs of institutions (Norris & Poulton, 1991). The late 1950s and early 1960s witnessed the shift from authoritative management to an emphasis on quantitative techniques. The growing size and complexity of institutions in the 1960s was accompanied by more participatory decision making and decentralization of power. Strategic issues changed from overall expansion in the 1960s to selective growth and retrenchment in the 1970s. The problems of the 1970s highlighted limitations of planning and policy support tools that were overly prescriptive, often inflexible, and unduly focused on techniques.

The 1980s brought new challenges that required different responses. Institutional decision makers embraced "strategic management" as an effective tool for managing their organizations. External and internal information and analysis was critical for strategic planning. Master planning re-emerged with a more proactive, change-agent orientation and with a greater focus on outcomes, program quality, and institutional effectiveness. As higher education planners prepare for the mid and late 1990s, they will need to plan "holistically" by integrating the various planning processes. Linking academic/strategic planning with facilities planning is one way to do this.

Brase (1988) and Bruegman (1989) advocate integrating academic and strategic planning with facilities planning and fiscal planning. The elements of this comprehensive planning process include an academic plan, a physical development plan, strategic institutional priorities, a capital budget plan, and an operating budget plan. The importance of the link between academic and facilities planning cannot be overstated. Because land-use decisions tend to be irreversible, Brase believes that costly physical planning errors can best be avoided by integrating academic and physical planning efforts. The following discussion will describe two planning processes, academic/strategic planning and facilities planning, and then show how they have been integrated at a public comprehensive northeastern university.

An academic strategic plan is the foundation of the planning process. The development of such a plan, which may include a mission statement, external threats and opportunities, internal strengths and weaknesses, strategic issues, implementation actions, and a "vision of success" (Bryson, 1989), must precede the facilities plan. The former is a blueprint for academic programs and initiatives while the latter is program driven, that is, it supports academic and non-academic activities. Program needs can be explicitly stated in terms of space requirements. Whereas development of the academic strategic plan is usually formulated by an internal committee, it may be preferable to utilize consultants in developing the physical plan, in order to achieve an objective, external point of view (Bruegman, 1989).

Once both plans are complete the institution can integrate them by preparing a statement of institutional priorities. These priorities are developed from the planning assumptions and goals and objectives in each plan, and culminate in implementation strategies. In the final stage, priorities are linked to capital and fiscal operating budgets for funding.

Strategic Planning

Lock Haven University, a comprehensive public institution with 3,900 enrollments (3,500 on the main campus) located in north central Pennsylvania, embarked on a strategic planning process in 1989. Although this was not the first attempt at institution-wide planning, it was the first time that academic planning was integrated with facilities planning and the budget. A Director of Planning and Evaluation was hired, and a Strategic Planning Committee formed. Working with the committee, the Director conducted planning retreats and workshops and prepared a Strategic Planning Manual, which was issued to all faculty and staff. As the president said in his preface to the Manual, "We are faced with an uncertain future that holds great potential for this institution as well as serious challenges. Strategic planning will help us shape that future in a positive way" (Fabian, 1989).

Although the institution had recently revised its mission and goals statement and conducted an internal assessment as part of a self-study report for re-accreditation, no attempt had been made to identify significant environmental factors. In the spring of 1990, the Strategic Planning Committee conducted a macro-level environmental scan. The resulting document, Summary Evaluation of Lock Haven University External Assessment, identified demographic, faculty, economic, government, technological, and market trends that the university needed to respond to in its strategic plan.

While individual units prepared their strategic plans, the committee formulated planning assumptions based on opportunities and constraints identified in the external assessment. The university is one of 14 former normal schools that comprise the State System of Higher Education (SSHE). The planning assumptions reaffirmed the institution's original mission of teacher education while acknowledging new emphases in diversity, enrollment management, international education, outcomes assessment, and program quality. These assumptions also articulated the increasing importance of technology and the expanding role of research and professional development. Finally, the assumptions addressed the need for additional sources of revenue from the private sector to support new initiatives.

Many of the planning assumptions became strategic issues that were discussed at length. From these discussions emerged answers to the questions: where did the institution want to go and what would it look like? The strategic issue of enrollments was very controversial. Should enrollments continue to grow? How fast? Would the personal nature of the organization be lost if enrollments were not capped? Discussions of academic programs were enlightening. For example, should the new branch campus offer a four-year degree? What is the future of the masters program? Should the institution concentrate on liberal arts education, or emphasize professional disciplines? As each of these issues was resolved, they helped define the university more clearly.

In the spring of 1991 the committee reviewed all of the individual and aggregate level (vice-presidential) plans. The themes which were identified through many of the plans were as follows: academic initiatives; new academic programs; computers and information technology; library enhancements; student life; professional development; and advancement.

The committee prioritized planning goals, devised an implementation schedule, and then sent these recommendations to the president for his review. Because three of the four vice-presidents were on the committee, his views had been represented from the beginning, and few changes were made. The strategic plan was sent to all faculty and staff before being approved formally by the Board of Trustees. Although some resistance to the process was encountered, the support of the president and others was crucial to the success of strategic planning. The university is currently implementing goals and preparing a second strategic plan.

Facilities/Master Planning

In 1990, as the future programmatic directions of the university were taking shape, a Master Planning Committee was established. Unlike the Strategic Planning Committee, which was composed of a majority of faculty, the Master Planning Committee had only two faculty. Three administrators--the Director of Planning, Director of Physical Plant, and Vice President for Finance and Administration--served on both committees, and the continuity they provided was helpful in establishing a facilities plan that supported strategic initiatives. In addition to the internal members, three consultants from Hunt Engineers and architects provided expertise.

The master planning group began by "...establishing needs both immediate and projected and by identifying opportunities" (Lock Haven University, 1991b). Needs were formulated by deciding what facility changes could best support strategic planning initiatives and by evaluating the quality of the physical plant. Opportunities were assessed to guarantee that they were compatible with the institution's mission, values, and self-conception. Planning assumptions were made with regard to enrollment growth, instructional changes and impacts on facilities, specialized facilities, most pressing needs, and areas of opportunity. As a result, the committee chose six strategies to improve the physical plant. They were: residence hall expansion; parking expansion; existing building renovation and reorganization; property acquisition; campus circulation; and outdoor amenities.

Because the construction of a dike-levee near the campus threatened the imminent loss of parking and athletic fields, three potential capital projects which would relocate parking and athletics and expand a residence hall complex were considered. Design studies proceeded on the feasibility of converting one residence hall to academic use, relocating athletic fields, expanding parking, and constructing a new residence hall. Schematic design studies were tested for a future main campus of 4,000 students. This long-range scenario called for library and dining hall expansions, an additional residence hall, more parking, a new academic building, and an additional athletic field.

Final decisions were made to acquire new properties for parking, relocate athletic fields, convert the boiler plant into an academic building, and initiate campus beautification projects. In addition, an existing science building is being refurbished to support physical science majors and faculty. A capital campaign is underway that will collect sufficient donations to supplement state capital money for renovations of buildings. These projects will support academic and student life initiatives in the strategic plan.

Concluding Remarks

The preceding discussion assumes that an integrated planning process is desirable, and that this innovative approach can strengthen planning and improve decision making. It can, but only if certain conditions are met. Barriers to integration are formidable, and resistance can come from many quarters. Bruegman (1989) identifies nine criteria essential for successful integration of planning: a comprehensive planning process, a team-oriented organizational structure, skilled technical staff, an information base, use of external consultants, controlled participatory involvement, decisive leadership, governing board involvement, and fixed responsibility for implementation.

Even under ideal conditions, however, fiscal challenges and external uncertainties make long range planning problematic. To succeed, planning cannot be static; it must be a dynamic, iterative process. Strategic and facilities plans must be reviewed on a regular basis to take advantage of emerging opportunities or respond to threats.

Although it is too early to evaluate the success of planning at Lock Haven University, the implementation record is mixed. Strategic planning was a highly participative, bottom up process that involved many constituents and raised expectations, whereas master planning was a top-down, restricted process. Both plans include projects that would improve program quality and the physical plant, but implementation is hampered by reduced state funding. Full implementation is dependent on the success of a capital campaign that is still in its infancy.

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Getting to Know Your Freshman Class: A Pre-Orientation Survey

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Terenzini and Pascarella (1991) conclude their recent comprehensive review of the literature on how college affects students with a section on implications for institutional practice. Here they point to the importance of freshman orientation and other first year experiences in helping students make a successful transition to college. With respect to instruction, they emphasize that engaging students actively in learning is key in promoting cognitive growth. This, they believe, requires faculty to be aware of students' cognitive and affective developmental status and to take this into account in designing learning experiences. This paper describes a survey whose main purpose was to provide faculty and orientation leaders with information on students' background and feelings as they approach college. After discussing how the survey was developed, selected results will be presented. The manner in which these results were disseminated and how they were used will also be described.

Development of the Survey

The State of New Jersey requires that each entering freshman at public colleges take a test of basic skills in order to determine their need for remedial course work. This test is usually taken in the spring of students' senior year in high school, after they have been admitted to college and paid a deposit, thus indicating their intention to attend. In most cases, students take the test at the college they expect to attend. As a warm-up exercise and because there are inevitably late-comers, the Basic Skills test administrator at William Paterson College is quite amenable to giving a survey at the beginning of each Basic Skills test session. For an institutional researcher, the opportunity to survey ninety percent of the incoming freshman class is an invitation that's hard to refuse.

Over the past several years we have taken advantage of this opportunity to ask students a variety of questions about their views of the College and their admissions experience. However, since the results usually do not change much in the course of a single year, it raised the possibility of a different type of survey in alternating years. William Paterson has recently been devoting special effort to improving students' transition into college. It has done this through changes in freshman orientation and by initiating a one-credit freshman seminar. The institutional research office was interested in providing information that might enhance these efforts. A variety of models that examine student change during college (e.g., Tinto, 1987; Pascarella, 1985; and Weidman, 1989) recognize that students come to college with background characteristics and expectations that influence what they gain from college and whether they persist through graduation. We believed that a survey that provided this type of information on a timely basis to orientation leaders and teachers of the freshman seminar might enhance understanding of students and that this in turn have a positive effect on the teaching/learning process. At the very least, this type of information could provide a starting point for a dialogue with the students: "On the survey you completed before you came to college almost half of your classmates were concerned about their ability to succeed academically. How do you feel? What can you do to improve your chances of success?"

In developing this survey several individuals were consulted: the Director of Freshman Life, Director of Minority Education and some faculty who taught the freshman seminar. In general, these people found it difficult to articulate the type of information they would find useful. When offered possible questions, however, they were able to suggest modifications. The final survey consisted of four pages and asked about educational aspirations, sources of funding for college, students' feelings related to attending college, their home and family, background experiences, use of radio, television, newspapers and magazines and a traditional question about their choice of college. See Appendix A for a copy of the survey.

The survey was completed by 925 Fall 1992 entering full-time freshmen (90 percent of the class) when they took their Basic Skills Test in the spring and summer prior to entering William Paterson. Background statistics on the 890 students who provided their social security number indicate that survey respondents were quite representative of the entire student body with respect to sex, race/ethnicity, combined SAT and high school rank.

Results

The following is a brief summary of the most interesting results.

Family Background

In general, students come from very traditional family backgrounds. The great majority of students (96 percent) now live with their parents, almost three-quarters of whom are alive and living with each other. Only four students are married or have been married and 12 students have children. All of these indicated that they felt comfortable about their child care arrangements. There were important differences by race/ethnicity. Almost 80 percent of white students indicated that their parents were both alive and living with each other. For Hispanic students this percent was 55 and for African-American students it was 28 (see Figure 1). All of these differences were statistically significant ($p < .05$).

Funding for College

More than 40 percent of students either agreed somewhat or agreed strongly that they were worried about paying for college (see Figure 2). A significantly higher percentage of African-American and Hispanic students were worried than white students ($p < .05$).

Across all students, parents were most frequently cited as a major source for funding college education. There were significant differences by race/ethnicity. Parents were a major source of funding for almost 80 percent of white students, but for only 52 percent of Hispanic students and 38 percent of African-American students. African-American and Hispanic students were significantly different from white students but not from each other ($p < .05$). In general, scholarships and grants and employment were major sources of funding for higher percentages of African-American and Hispanic students than white students.

Feelings about College

A series of questions described feelings about different aspects of college life. Students indicated that they agreed strongly, agreed somewhat, weren't sure, disagreed somewhat or disagreed strongly with these statements. In general, students had very positive feelings about attending college. Ninety-six percent of students agreed that they were looking forward to college (78 percent of them strongly).

Students overwhelmingly expressed comfort about attending class with people whose race is different than theirs (97 percent) and about getting to know people whose ideas and background are different (98 percent).

The greatest concern of students centered around their ability to succeed academically (see Figure 3). Forty-two percent of students expressed at least some concern about this. Almost a quarter of students agreed somewhat or strongly that they were concerned about making new friends and more than a quarter that they were concerned about being able to handle freedom from their parents.

Fewer students than expected indicated concern about being pressured to drink more alcohol than they want to (6 percent) and about being pressured to engage in sex when they don't want to (7 percent).

Previous Experiences

Students were asked several questions about previous experiences that are potentially related to preparation for college (Figure 4). More than three-quarters indicated that they had used a computer for word processing and 90 percent that they had visited an art museum. With respect to travel, almost all (98 percent) had traveled outside New Jersey and a surprising 52 percent had traveled outside the U.S. Ninety-eight percent report having had a friend whose race was different from theirs. The only previous experience item for which there was a significant difference by racial/ethnic background was traveling outside the U.S. More Hispanic students (80 percent) have done so than have African-American (34 percent) or white students (47 percent).

Dissemination of Results and Their Use

We have found that smaller reports targeted for a particular audience are more effective than larger comprehensive reports. In keeping with this, the following reports based on results from this survey were distributed:

1. A summary of highlights for the Director of Freshman Life for use in addressing parents and students during freshman orientation.

2. A summary of findings of general interest to faculty. An advanced copy of this report was distributed under a cover letter and during the first week of class to all faculty teaching the freshman seminar course. This same report was also distributed to all faculty and staff as an OPRE (Office of Planning, Research and Evaluation) Report under our traditional masthead.

3. A summary of findings about media use was distributed to our Office of Public Relations which had requested the information.

4. A summary of the college choice data was distributed to our Admissions and Enrollment Management offices.

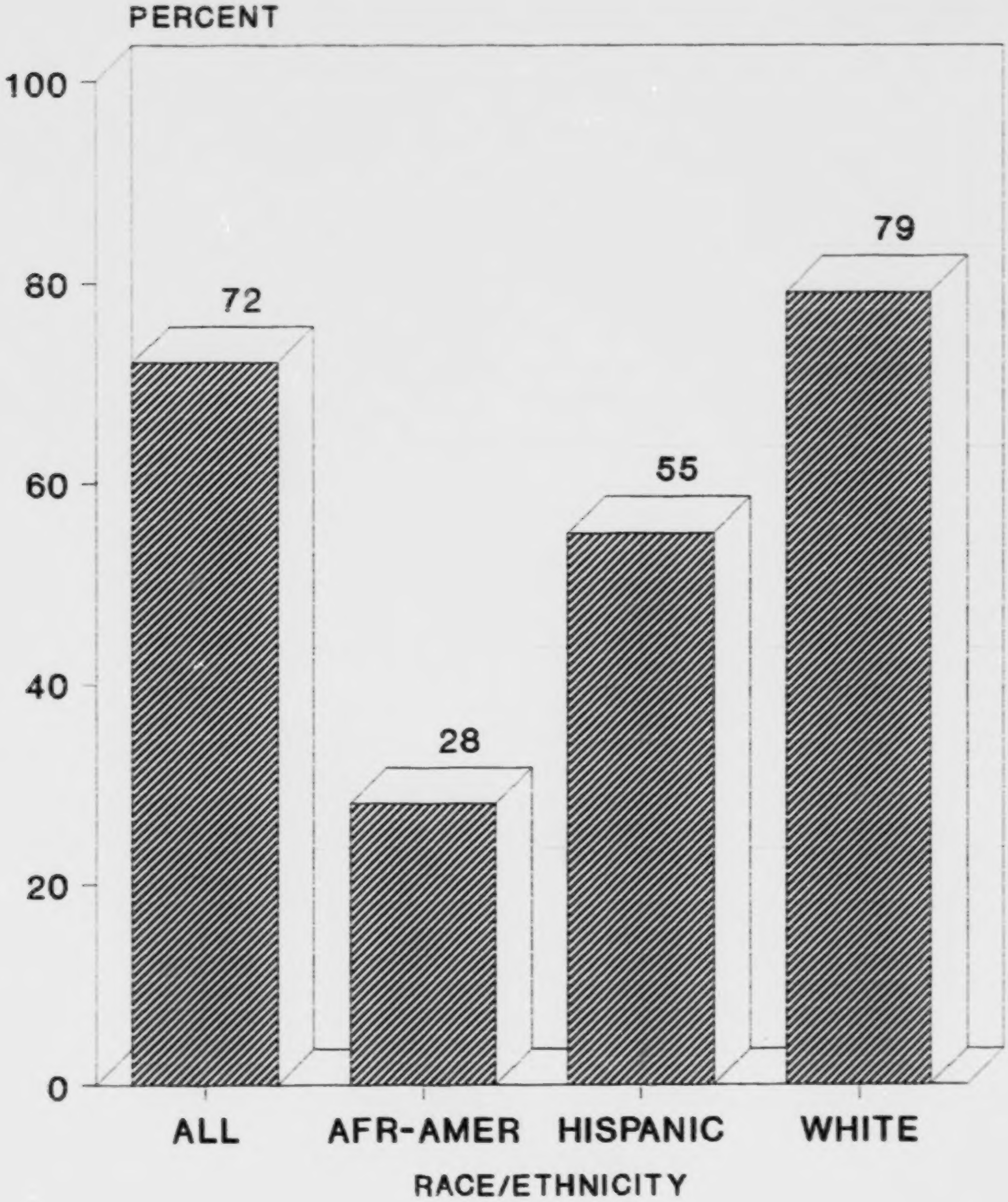
Use of results from institutional research studies is often difficult to gauge. This study is no exception. The Director of Freshman Life found the information to be very useful in her presentations to and conversations with students and their parents. To the parents she could say that the students had indicated concern about academic success or about handling freedom from their parents, etc. and then describe the various ways in which the College is seeking to address these concerns. To the students she was able to point to what they told us on the survey about the number of hours they expect to work and to discuss with them the impact of work on what they get out of college. On a more humorous note, students cheered when she told them that the most popular television program was Beverly Hills 90210 and the radio station listened to most frequently was Z100. An underlying message to both the students and the parents is that we are listening to what the students have told us and we are attempting to address their needs.

We do not have clear evidence concerning the use of these survey results by the Freshman Seminar instructors. While a number of them commented that the report was interesting, they did not cite any specific use. In the past we have found that reports that we thought had gone unread and unused, in fact have become a part of our collective knowledge base and play a role in policy decisions. We know this because we hear people cite information from previous reports in their discussions. Because this survey provides new information about our students and their background experiences, it does contribute to our shared knowledge base about our students.

Sometimes the most interesting and useful results are those which were secondary when designing the original survey. In the case of this survey, perhaps the most significant information was the financial concerns of African American and Hispanic students. Fewer of them cite their parents as a major source of funds for college and more of them cite grants, scholarships and employment. In addition, larger percentages of African American and Hispanic students were worried about paying for college. This has clear policy implications for the financial support required to meet the needs of these students and to create a more diverse campus community.

FIGURE 1

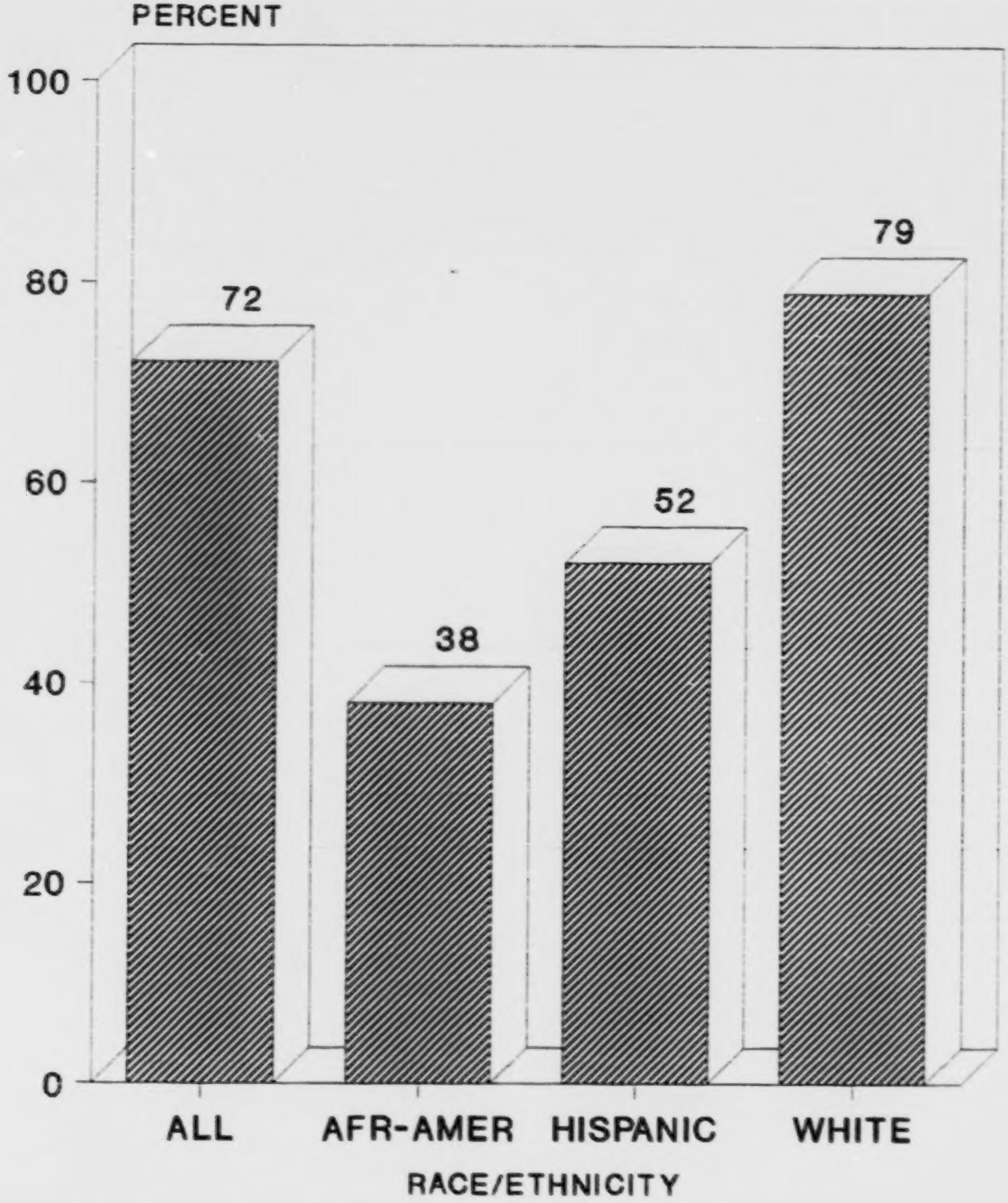
PERCENT OF FRESHMEN WHOSE PARENTS ARE BOTH ALIVE AND LIVING WITH EACH OTHER



FALL '92 ENTERING FRESHMEN

FIGURE 2

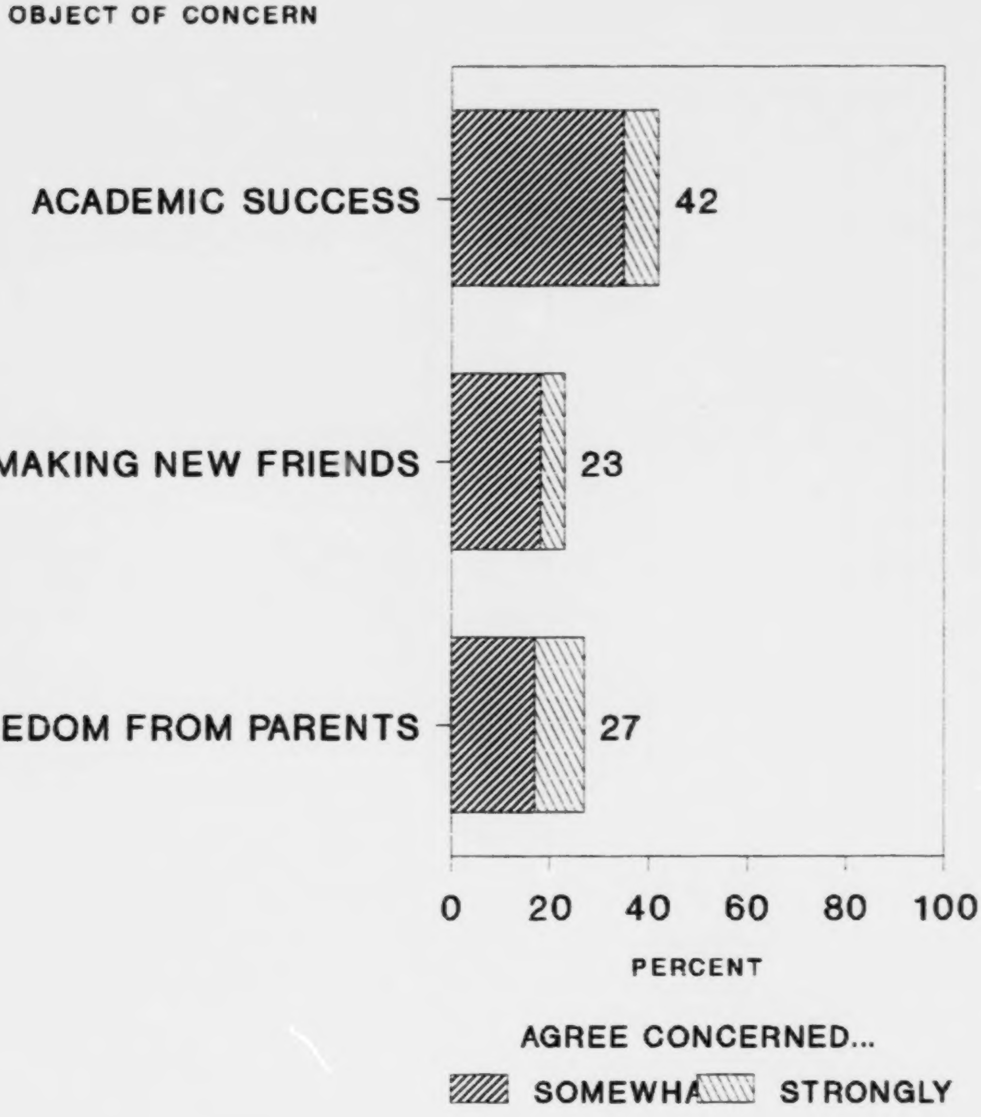
PERCENT OF FRESHMEN WHOSE PARENTS ARE A MAJOR SOURCE OF FUNDS FOR COLLEGE



FALL '92 ENTERING FRESHMEN

FIGURE 3

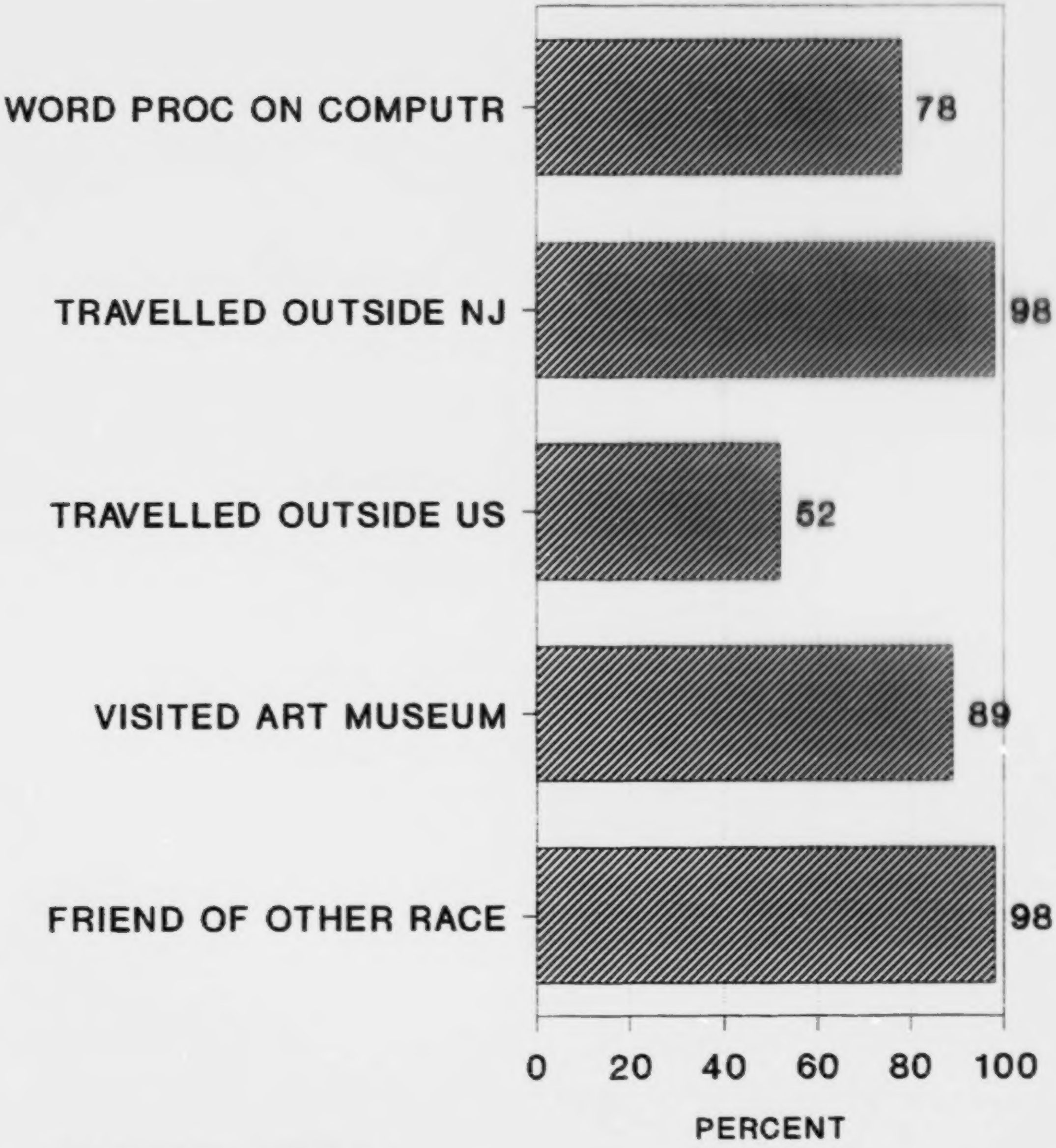
PERCENT OF FRESHMEN AGREEING THAT THEY ARE CONCERNED ABOUT. . . .



FALL '92 ENTERING FRESHMEN

FIGURE 4

PERCENT OF FRESHMEN WHO HAD PREVIOUSLY. . . .



FALL '92 ENTERING FRESHMEN

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Appendix A

WILLIAM PATERSON COLLEGE NEW STUDENT QUESTIONNAIRE
FALL 1992

Dear Student:
Welcome to William Paterson College. In order to improve our ability to meet your needs we would like to find out more about you. Please be assured that your individual responses on this survey are confidential and will not be released to anyone. The summarized results will be used to help plan activities and services for our new students. Your social security number will enable us to obtain background information from the college data base and thus make this survey as short as possible. Thank you. Office of Planning, Research and Evaluation

YOUR SOCIAL SECURITY NUMBER: ___ ___ ___ - ___ ___ - ___ ___ ___ ___

ABOUT COLLEGE. . . .

1. In the fall I will enter college as a: (circle one)

   a. First Time Freshman.   b. Transfer Student.

2. I expect to attend college: (circle one)

   a. Full time   b. Part time

3. I expect to: (circle one)

   a. Graduate from WPC.

   b. Attend WPC for a year or two and then transfer to another college.

   c. Attend WPC for a year or two and then leave to get a job.

   d. Attend a college other than WPC.

4. Among the colleges to which I applied, WPC is my: (Circle one)

   a. First choice

   b. Second choice

   c. Third choice

   d. Less than third choice

5. The highest academic degree I intend to obtain is a: (circle one)

   b. Bachelor's degree

   c. Master's degree

   d. Doctor's Degree (Ph.D, Ed.D)

   e. Medical doctor degree

   f. Law degree

   g. Other. Specify ____________________

6. Indicate whether each of the following will be a major source, a minor source or not a source of funding for your college education. Circle one number for each item.

	MAJOR SOURCE	MINOR SOURCE	NOT A SOURCE
a. Parents/Relatives/Spouse	3	2	1
b. Educational Grants (Pell, etc.)	3	2	1
c. Scholarships	3	2	1
d. Student Loans (Guaranteed Student Loan, etc.)	3	2	1
e. Other Loans (Bank Loans, etc.)	3	2	1
f. Employment while attending college	3	2	1
g. Personal savings	3	2	1
h. Other. Specify ____________________	3	2	1

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7. On average, how many hours per week do you expect to work for pay during your first year at college? (circle one)

a. 1-10 hours b. 11-20 hours c. 21-30 hours

d. 31+ hours e. I do not intend to work

ABOUT YOUR FEELINGS AND VIEWS. . . .

8. Circle the number that best describes the extent of your agreement or disagreement with each of the following statements. If a statement does not apply to you, circle NA (not applicable).

	DISAGREE STRONGLY	**DISAGREE SOMEWHAT**	**NOT SURE**	**AGREE SOMEWHAT**	**AGREE STRONGLY**	**NA**
a. I am looking forward to attending college.	1	2	3	4	5	NA
b. I am satisfied with my decision to attend WPC.	1	2	3	4	5	NA
c. I am worried about my ability to succeed academically.	1	2	3	4	5	NA
d. I am worried about my ability to make new friends.	1	2	3	4	5	NA
e. I know what I want to major in.	1	2	3	4	5	NA
f. I know what I want to do when I graduate from college.	1	2	3	4	5	NA
g. I am comfortable attending class with people whose race is different from mine.	1	2	3	4	5	NA
h. I am comfortable socializing with people whose race is different from mine.	1	2	3	4	5	NA
i. I look forward to getting to know people whose ideas and background are different from mine.	1	2	3	4	5	NA
j. I am concerned about being able to handle freedom from my parents.	1	2	3	4	5	NA
k. I am concerned that I'll be pressured to drink more alcohol than I want to.	1	2	3	4	5	NA
l. I am concerned that I'll be pressured to engage in sex when I don't want to.	1	2	3	4	5	NA
m. I am worried about my ability to pay for college.	1	2	3	4	5	NA

9. In general, I consider my political views to be: (circle one)

a. Conservative

b. Liberal

c. Middle-of-the-road

d. I'm not interested in politics

ABOUT YOUR HOME AND FAMILY. . . .

10. How do(es) your parents, guardian or spouse feel about your decision to attend college? (circle one)

a. Fully support my decision to attend college.

b. No opinion. The decision to attend college is up to me.

c. Prefer(s) that I get a full-time job and do(es) not fully support my decision to attend college.

d. Prefer(s) that I remain at home and do(es) not fully support my decision to attend college.

e. I do not have people to consult in making my decision.

11. Are you currently living with your parent(s)? (circle one)

a. Yes b. No

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12. Are your parents: (circle one)

a. Both alive and living with each other?

b. Both alive and divorced or separated?

c. One or both deceased?

13. How many brothers and/or sisters do you have (excluding yourself)? _____

14. Are you currently: (circle one)

a. Single b. Married c. Divorced or Separated d. Widowed

15. Do you have any children? (circle one)

a. No b. Yes

16. If you responded "yes" to question 15, circle the answer that best describes your situation.

a. I have young children and feel comfortable about my child care arrangements.

b. I have young children and feel somewhat concerned about child care arrangements.

c. Because my children are old enough I do not have child care concerns.

17. How many miles is WPC from your permanent home? (circle one)

a. 5 or less b. 6-10 c. 11-30

d. 31-50 e. 51-100 f. more than 100

ABOUT YOUR BACKGROUND AND EXPERIENCE. . . .

18. How many students are/were in your high school graduating class? (circle one)

a. Fewer than 100 b. 100-199 c. 200-399

d. 400-599 e. 600-799 f. 800+

19. During your senior year in high school, approximately how many hours per week did you usually spend on the following activities? (circle one response for each item)

	AVERAGE HOURS PER WEEK				
a. Participating in high school activities outside of class.	NONE	1-5	6-10	11-20	21+
b. Working for pay.	NONE	1-5	6-10	11-20	21+
c. Doing volunteer work.	NONE	1-5	6-10	11-20	21+
d. Exercising or participating in sports.	NONE	1-5	6-10	11-20	21+
e. Watching television.	NONE	1-5	6-10	11-20	21+
f. Listening to the radio.	NONE	1-5	6-10	11-20	21+
g. Reading newspapers.	NONE	1-5	6-10	11-20	21+

20. Have you ever: (circle YES or NO for each item)

a. Used a computer for word processing.	YES	NO
b. Travelled outside New Jersey.	YES	NO
c. Travelled outside the U.S.	YES	NO
d. Visited an art museum.	YES	NO
e. Had a friend whose race is different from yours.	YES	NO

ABOUT RADIO, TELEVISION, NEWSPAPERS AND MAGAZINES. . . .

We would like to learn about the most effective way of reaching out to you and your parents through radio, television, newspapers and magazines. Your responses to the following questions will help us do that.

21. Which radio stations do you **MOST FREQUENTLY** listen to? Please list the call letters and numbers.

____

22. What hours do you typically listen to the radio? (check all that apply)

___ 6 am - 9 am
___ 9 am - 12 noon
___ 12 noon - 3 pm
___ 3 pm - 6 pm
___ 6 pm - 9 pm
___ 9 pm - 12 midnight
___ 12 midnight - 3 am
___ 3 am - 6 am

23. Which television programs do YOU watch **MOST FREQUENTLY**?

____

24. Which television programs do **YOUR PARENTS** watch **MOST FREQUENTLY**?

____

25. Which newspapers do you get at home, if any? Check all that apply.

___ The Record
___ Newark Star Ledger
___ Hometown newspaper
___ Other (please specify) ______________________________
___ North Jersey Herald and News
___ New York Times
___ Free shopper newspapers

26. Which magazines, if any, do you get at home?

____

ABOUT YOUR CHOICE OF COLLEGE. . . .

27. List in order of preference up to five colleges to which you applied and indicate whether you were accepted, placed on the waiting list, or not notified. Include WPC, if appropriate.

NAME OF COLLEGE		**WERE YOU ACCEPTED?** (CIRCLE ONE)			
1st Choice	________________	Yes	No	Waiting List	Not Notified
2nd Choice	________________	Yes	No	Waiting List	Not Notified
3rd Choice	________________	Yes	No	Waiting List	Not Notified
4th Choice	________________	Yes	No	Waiting List	Not Notified
5th Choice	________________	Yes	No	Waiting List	Not Notified

28. If you will be attending WPC, what are the TWO most important reasons for choosing WPC?

1. ______________________________
2. ______________________________

29. Is there anything else you would like us to know?

____
____
____

THANK YOU FOR YOUR ASSISTANCE. GOOD LUCK!

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High School Graduates: What Do You Do With The Data

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State System of Higher Education

Introduction

As the crest of the baby boom wave were graduating from high school in 1976, any number of changes loomed in the future for institutions of higher education. For institutions like those in the Pennsylvania State System of Higher Education (SSHE) and Penn State University (PSU), who have a major responsibility to service the needs of Pennsylvanians, decreases in the state's high school graduates could have a major impact on their enrollments. We realized the need to look more closely at how we are serving Pennsylvania's graduates and how we may better that relationship. Focusing on our recruitment efforts and yields has became more important to us all.

The years from 1977 to 1991 have indeed shown continual declines in the number of high school graduates in Pennsylvania, as well as in the number of persons in the normal high school graduate age group. Fortunately, due to a variety of efforts and economic trends, the number of graduates who attend college in the year following high school graduation has remained relatively stable or increasing from the 1976 level. Still, the affects on Pennsylvania of the whole nation's decline in graduate age persons and in high school graduates, has placed considerable importance on planning for the impacts. In addition, for the years through 2003, the number of Pennsylvania high school graduates will only reach or slightly exceed the 1989 level by the year 2003. The high school graduates in the years 1990 and 1991, the most recent actual data, show numbers less than that of 1989. The lowest number of Pennsylvania high school graduates in the 1976 through 2003 time frame is expected in 1994, the eighteenth year of the decline.

Both the Pennsylvania State System of Higher Education and Penn State University have been receiving information from the Pennsylvania Department of Education to use to help monitor the activities of Pennsylvania school students. The following report covers the development and outcomes of the work we each have done with this information.

Pennsylvania Department of Education Data Description

The Pennsylvania Department of Education (PDE) produces printed reports which provide county by county detail of the public and non-public sectors of the state enrollment and graduation data each year. These reports, in addition to projections of high school graduates that had been produced by PDE for many years, were at one time the only source of this information. While both the SSHE system and PSU made use of the data in this form, the advent of PDE data at the school level in magnetic form has greatly expanded the possibilities for its use.

At present PSU is receiving four files each year from PDE. These files by each school in Pennsylvania include the following: public school enrollment by race by grade; non-public school enrollment by grade only; public school graduates by post high school activity by race by gender; and non-public graduates at the same levels as the public graduates. The SSHE system has been receiving the two graduation files. Each of our abilities to make use of these files is controlled to a large extent by our resources and needs. While we both realize the usefulness of the data, there are also any number of problems that arise, not the least of which is the timing and consistency of the data and the format of that data received from PDE.

The biggest problem with these tapes is the time frame in which they become available. The high school graduates of the Spring of 1991 were ready for publication and tape dissemination in August of 1992, a little better than a year after they graduate. Timing is also a problem with the Enrollment reports, which are not ready until as late as September some years, after the data were collected in October of the previous year. Obviously with 501 school districts reporting the time to process data becomes fairly lengthy. Also with cutbacks in manpower the department does not have the staff to complete the task earlier, due to the antiquated data collection process which is still basically by hand. At least the finished product can now be obtained on tape somewhat earlier than the printed document.

Another large overriding complication for both the State System and the State-Related universities, of which PSU is one of four, is that in 1988 the Department of Education, changed the way the college bound students were reported by their school districts. The change was in the area of the intentions of what type of Pennsylvania school the students said they were going to attend after graduation from high school. Up to 1988 the State System universities and the State-Related institutions were separated. In 1988, 1989, and 1990 the graduates were lumped together under the title of Pennsylvania four-year public colleges. Needless to say it was a real surprise to all researchers in the state that their longitudinal studies in this area were put on hold and only estimates to either sector of higher education could be surmised. In 1990 a letter was sent to the Department of Education requesting a return to separating the two public sectors. In time for the 1991 graduates, the form was changed and the studies could be resumed.

Hopefully the state will make progress in the collection, consistency and dissemination of all enrollment and graduation data on a more timely basis in the future.

State System of Higher Education and Penn State Descriptions

In order to better interpret the way each of us has approached the direction and extent to which we have used and plan to use the PDE information, a description of our institutions and positions follows.

State System of Higher Education

The State System of Higher Education is composed of fourteen (14) universities located across the state and the Chancellor's Office. All of the universities offer both undergraduate and selected graduate programs. This year with a 3.5% drop in overall funding by the state, and an enrollment management system in place, headcount enrollment in Fall 1992 was expected to drop. From a high of 99,850 students in the Fall of 1991, the headcount for Fall 1992 is 98,624, a drop of 2.1%.

The state universities spent the first 100 years of existence preparing teachers for Pennsylvania's schools. The Normal School Act of 1857 established regional teacher training institutions throughout the Commonwealth. The School Code of 1911 called for the state purchase of all normal schools, and by 1921, the present configuration of the 14 state-owned institutions was established. The normal schools evolved from state normal schools, to state teacher colleges, to state colleges. On November 12, 1982, Act 188 was signed into law establishing on July 1, 1983, Pennsylvania's State System of Higher Education, including the 13 former state colleges and Indiana University of Pennsylvania.

The chancellor is the chief executive officer of the State System. Appointed by the Board of Governors, the chancellor is responsible to the Board for overall administration of the System. Under the chancellor's direction, the university presidents and staff provide System-wide management in such areas as academic policy, planning, business affairs, faculty and staff affairs, legislative policy, institutional research, legal affairs, capital planning, and equal education opportunities.

As Data and Information Manager, under the Vice Chancellor for Academic Affairs in the Office of the Chancellor, I am responsible for the management and maintenance of the System data base, the collection of campus provided data, the annual Data Collection Plan, and submission of all state and federal reports for the universities.

Penn State University

Penn State University is a comprehensive, multi-campus research university offering numerous undergraduate and graduate programs in the arts and sciences. It also serves as the land-grant university for the state with the responsibility of providing a wide array of programs in the professional and technical disciplines. With twenty two (22) campuses, Pennsylvanians have a Penn State campus to serve them in most all regions of the state.

Total PSU headcount enrollment for credit instruction in the Fall of 1992 was 70,576, with the undergraduate enrollment at 59,705. The undergraduate credit enrollment of Penn State is made up of 88.5% Pennsylvanians, with 89% of all undergraduate degree students age 24 or under. Undergraduate instruction is available at the main campus, University Park; Penn State Erie; Penn State Harrisburg; and seventeen (17) Commonwealth campuses. The 17 campuses offer instruction at the lower division level, after which students may choose to transfer to one of the three 4-year undergraduate locations. Graduate programs, in addition to being available at some of the above locations, are also offered at a Great Valley campus, and a medical school is located in Hershey, Pennsylvania.

With such a widely dispersed student body, most of whom will be moving into the main campus, University Park, at some point in their undergraduate degree career, it is very important that we monitor the enrollment at all locations. Pennsylvania high school graduates are the major source of our first-time freshmen at all locations, making them the single most important demographic group for PSU. Application to Penn State, as well as budgeting, most all other record keeping, federal reporting and the like is made through the main University Park campus. We also try to provide as much support information and analytical assistance as possible to all of our locations.

As part of the Office of Budget and Resource Analysis (B&RA) at University Park, my main responsibility is to produce enrollment projections for the whole university system. The design and development of decision making tools, analytical studies of retention, progression, and mobility of students within the PSU system, and recommendations to the University Committee on Enrollment Planning and Policy are part of my role as a member of the Enrollment Planning Support Group, B&RA, in addition to the central budgeting role, is also responsible for all federal, state, and other external reporting. To serve these needs, the office is composed of a staff of budget analysts, systems analysts and programmers, and support personnel. With this diverse staff of 35 people, and electronic access to all university data, the ability and need for utilizing the PDE data is manyfold.

State System Uses of High School Graduate Data

The State System is currently still using the PDE published reports but is planning to utilize the information on tape in the future. Due to the years delay in getting high school graduate data from the PDE, the Research Office of the Chancellor's Office uses the data reports primarily to check on the success of the 14 state universities in their recruitment of the past years high school graduates. We look at the tables of graduates by sex and race within counties as provided on the PDE reports. We also use a number of additional PDE tables showing high school graduates by county, college bound graduates, and percentages of each group. Unfortunately the reports are not summarized by public and non-public schools together, thus making it necessary to combine the data from two or more tables to study the total graduates.

Results

Using the college bound tables, analysis of the data shows that as a whole the State System does a good job of recruiting students to their individual institutions. By looking at individual counties it is possible to see where success has occurred and where more effort might help bring additional students to the campuses.

Another use of the PDE reports is in measuring the success or non-success in the recruitment of minority students. The State System Universities have been under not only court orders but also a specified set of goals for affirmative action since the early seventies. This was not only true of blacks and latinos but other minorities too. The schools have specified goals for minority enrollment that should be reached each fall semester. These goals are specified in the Affirmative Action Prospectus, which is a five year plan to reduce the disparity between participation rates of whites and minority students attending State System Universities. The last plan, which is being updated, helped the universities attract minorities in ever larger numbers. The plan's purpose is to reduce the disparity of black and Latino participation in higher education and bring it in line with white participation. The goals specified are still the basis for minority recruitment at the 13 predominately white schools. The fourteenth, Cheyney University, is a predominately black institution and is under a goal to increase its white enrollment.

Where there are large concentrations of black high school graduates, in Philadelphia, Pittsburgh, Scranton and Harrisburg, the State System universities have not been as successful as they would like. Many reasons can be advanced for this. One is that the locales of each of the universities is rural. The map of the State System shows this. Schools in the rural areas of Pennsylvania have a hard time convincing an inner city high school senior, whether black, Latino or even white, that they can be happy away from their cultural roots. Another factor in the lack of success is the need for private transportation to reach all but one of the System universities. Thirdly, in many cases the rural community doesn't look very favorably on racial diversity. Our campuses are not immune to racial strife or similar problems. A fourth factor is the increasing competition for all students as the high school population declines. This is especially true in the larger metropolitan areas of the state. For example, if a student resides in Philadelphia and is interested in attending either Cheyney or West Chester Universities, he or she could pass almost a hundred institutions of post-secondary education between the individual's home and the Cheyney or West Chester campus.

Student recruitment for the State System universities is not based on the large metropolitan areas. Incoming students come primarily from the smaller cities, the suburbs, and from rural Pennsylvania. Counties which have a campus or branch of a System university are the biggest producers of students. Contiguous counties to System campuses also are fairly large producers of students. In the areas of the state where no institution of higher education exists, which includes 18 counties in Pennsylvania, the enrollment from these counties drops off noticeably.

An example of ability to attract local students is Clarion University, along with its branch campus at Oil City in neighboring Venango county. Over 58% of the 1991 high school graduates in Clarion county came to a State System school. Not all went to Clarion but the large majority did. It should be noted that the only institution of higher education in Clarion County is Clarion University. Over 49% of the Venango county grads attend a State System school. Clarion again gets the large majority of these students. It would seem to show that a campus in an area that does not have a large number of higher educational institutions can attract a large percentage of high school graduates in that county.

As was shown before, the success of the State System universities in attracting students from the metropolitan areas of Pennsylvania is not good. This is shown very graphically in Philadelphia. In 1989 there were a total of 13,510 high school graduates and only 685, or 5.1%, were enrolled in State System universities that Fall semester. In 1990 this percentage did increase to 5.4%, and in 1991 the percentage was 5.8%. When you look at just those students who said they were college bound, the percentages are 8.2 in 1989, 8.5 in 1990, and 8.9 in 1991. With the decrease in high school graduates, the increase in percentages means a small increase in enrollment from Philadelphia County. In Allegheny County which includes the city of Pittsburgh, the State System universities do somewhat better on a percentage basis. However, the difference between 1989 and 1991 actually declined by 1.3% from 13.9 to 12.8 percent.

In Central Pennsylvania, especially Dauphin County, with the third largest concentration of black residents in Pennsylvania, the same problem exists. The System universities do not do well in attracting students to their campuses. As in the Philadelphia area, the only way to get to the campuses is by private automobile. This actually led to a drop in percentages from 14.7 in 1989 to 12.8 percent in 1991.

Analysis of the PDE data has helped us confirm that there is an obvious need to make a more concerted effort of recruiting in the metropolitan areas. Only by doing this will the System universities be able to more adequately reach the goals of the affirmative action plan. More creative methods must be employed to tell the State System story, especially to help remove the notion that they are still only teacher training institutions.

How do the System schools do in the 18 counties which have no institution of higher education? The participation rate in the State System of these rural students is much better than in the metropolitan regions of the state. In these 18 counties, the State System universities enroll 22% to 24% of all college bound students. In many cases the number of graduates coming to the State System universities seems to be moving up each succeeding year. Pennsylvania finally surpassed the national average of college bound graduates in 1989. This has helped the State System reach record enrollments all during the time that the traditional high school graduating classes have been decreasing. Since 1989 the number of Pennsylvania high school graduates has decreased by 11.6%.

As noted in the preceding section describing the PDE data and its problems, a change was made in reporting student intentions to attend the State System versus the State-Related universities, which includes Penn State. Now that the information is once again being collected as it had been prior to 1988, we have returned to using this information to study our performance. It is interesting to note that there seems to have been a change in those students who said they were planning to attend State System universities from 1987 to 1991, and those who said they were planning to attend the State-Related universities. These changes were State System, 21.31% in 1987, to 22.72% in 1991 for the public school graduates. While the State-Related figures for the same period were 20.72% to 17.41% for the public school graduates. These data do not take into consideration enrollment controls that may have been imposed at certain universities in either of the two categories, but the data is important to consider in our enrollment management plans. It must be remembered that these are also self-reported data from the graduates, which may not be what actually occurred, but it is what we must work with and we are happy that it is made available.

Penn State University's Use of PDE School Enrollment and Graduation Data

In the most recent years, when the decline in high school graduates has been having the long anticipated impact on some Penn State campus enrollments, interest has grown in developing better enrollment planning methods. Requests for more and varied information about Pennsylvania high school graduates ranged from: Penn State campus service area high school graduate forecasts; analysis of yields of high school graduates to applicants and first-time students at PSU; projecting minority high school graduates; and studying the response to various high school recruiting efforts, to name a few. Additionally, there have been a number of inquiries from various school districts, recruiters and the like, to provide feedback information including performance, retention and progression of students from their area. OCR goals for minority enrollment at PSU, which were based on very rough projections of Pennsylvania's minority high school graduates made by the state, placed even more emphasis on the necessity to study this data.

Only with the data on tapes from PDE have any of these requests been reasonable to undertake. The following sections cover the development of the PDE data tapes into usable analytical information, and the purpose, problems, solutions and methods we used to get there.

Getting Started

Administrators, their staff, and most extensively PSU campus admissions officers, who are involved in planning for the future of the University, have been using the printed PDE reports for years, to provide an overview of the latest numbers and composition of the graduating classes in the regions with which they are concerned. Additionally, the B&RA office had used the PDE high school graduate projections as the basis for forecasting freshmen admissions as part of a PSU enrollment projection model. Initially, in the early seventies, the state graduate projection data were entered by hand into a mainframe enrollment projection model. When the state stopped publishing these projections, it became necessary to develop a projection system of our own to feed the enrollment model. Dr. Robert Newton of B&RA, now retired, designed a model to produce high school graduate projections by county to take the place of the PDE projections. In the late 80's we transferred both our high school graduate and PSU enrollment projection models from the mainframe to LOTUS on an IBM PC. This added the ability to analyze the data more closely and produce better printed reports and graphics.

In 1989 we began receiving the Pennsylvania public and non-public school enrollments and graduate counts by school from PDE on magnetic tape. The initial purpose was to better automate the PA graduate projection system by creating ASCII files that could be downloaded directly into the model. It also opened the possibilities for using the data for the other projects, as well as sharing the files with other University offices. We received five years of data files from PDE, so that we would also be in a position to study the data longitudinally.

File Building

Our first step in the process of utilizing these files was to design new enrollment and graduate records that would allow us to combine the public and non-public PDE files and add a key to Penn State files. We decided that a mainframe file of the combined data was essential in our changing environment. While our goal was to do all of the analytical and reporting work from our micros, we have found the mainframe to provide more of the flexibility we often need. To jump ahead a bit, we have already had to return to the files from past years to reset the counties connected with the schools, due to PDE changes, and again to change the PSU service area designations which we use as our key, when those were rearranged by our admissions people. The ability to maintain yearly update, correction, or change procedures which may require accessing the PSU student database or matching with flat files from PDE, is essential to keeping the files consistent for years to come. We also designed relatively large records with all the PDE data provided, which can now serve as the source of many different types of studies.

After designing the new record layouts, we had to work closely with the stewards of the data to ensure proper selection and matching, and in some cases, we had to depend on assistance from others to complete the project. PDE had to be consulted extensively to resolve differences between the formats and information included on the public versus non-public files. Within the seven years of files that we have now received from PDE, there have been about three different record formats for each of the four different types of files, just to mention one of the frustrations! As is often the case in starting an entirely new project, each step of the road has been fraught with it's own set of problems. Here are a few more that we encountered:

1. We wanted to be able to make a connection between the high school codes on PSU's student admissions records, which were College Board identification numbers, with PDE's school district related numbers. While we have not yet developed a crosswalk to make this connection between individual PSU students and the PDE records, the county of the high school is included on both records. We will return to making this crosswalk in the future.

2. We also needed to at least make a connection with the schools and the PSU campus service areas. This required obtaining a special school name/address/zip code file from PDE for the non-public schools since this information is not always carried on their enrollment record. The PSU campus service area key is set by our Undergraduate Admissions Office. It was necessary for cooperation from that office to add all Pennsylvania zip codes and matching PSU service area codes to accomplish the connection with all Pennsylvania schools on the PDE enrollment files.

3. Requesting the update of PSU records with the year of graduation from high school, which was missing at times due to the timing of the application process, was a step that came later when we wanted to better identify just those first-time students who were recent high school grads.

The list of problems could go on, but will vary greatly in different states and institutions. In all cases, it is essential in doing work across agencies and offices to keep the lines of communication open and to avoid making assumptions, as we learned the hard way. As we have begun to share some of the fruits of our labor with others, we have begun to receive pre-notification of changes, and can better plan the impacts. The result of having comparable, interconnected files is worth the effort.

Current Projects at Penn State

For each of the projects below, we have downloaded various summaries of the new PA school data files to our micro computers. We use LOTUS 123 for all of our applications at present. This software, in its 3.1 version, allows us to handle the data as a database for selection, further summarization and extraction. We have also built extensive macro systems to manipulate the data for yearly updates, including the movement of data from previous years, the importing of the new year's data, and even the resetting of input for graphs. Most of the LOTUS files are built with multiple sheets for ease of comparison across years, and developing formulas across the sheets, and finally, to produce print ready reports and graphics from the same file.

I. High School Graduate Projections By County

The county based high school graduate projection model, mentioned earlier in this paper, was developed by Dr. Robert Newton in the 70's to replace the no longer published PDE projections. The model is simplistic, using grade by grade transition ratios at the county level to produce the forecasts. Enrollment in each grade K through 12, high school graduates, and grads attending degree granting colleges, by county, for public and non-public schools was the first data that we extracted from our new PA school data files. We select then summarize and delimit the mainframe files to the county level, to allow us to download and import the data directly into an existing formatted spreadsheet on LOTUS.

Macros move past years of data on the spreadsheets to leave only the most recent three years. Formulas to create the grade by grade ratios are already built into the sheets. Three years of these ratios are averaged, again by preexisting formulas. A final step in the macro system moves the average ratio table and the current enrollment by grade and county, into another spreadsheet where formulas exist to multiply the ratios times the enrollment to create grade by grade projections through graduation for the next twelve years. Graphs and tables for the final publication are built on this file using the projected data. This 2 file design gives us a very good opportunity to analyze the numbers which feed the ratios and the averaging process in detail, and to make adjustments if permanent changes have occurred before producing the final projections.

This projection methodology has proven to be sufficient for use in our university enrollment projection system, and has performed within a .3 percent margin within the time horizon of one to two years for the state in most of the last nineteen years. A report with ten year high school graduate projections by county is produced and distributed to all interested parties across the state annually as a free service. Many of the Admissions Officers at our campuses have found them very helpful in planning for their areas. We also distribute the report extensively to parties outside the university. In recent years graphic comparisons with the total United States college bound high school graduate population have been added also.

II. HSG Projections for Minorities

As with the State System schools, Penn State's main campus and the majority of our branch campuses are located in rural areas of Pennsylvania. Many of the areas surrounding these campuses have few ethnic minority students. We are however, dedicated to increasing the diversity of the student population on all our campuses to provide educational opportunities and a more well balanced education for all. We are involved in a number of programs in elementary and secondary schools across the state to aid in the efforts to increase the number of minority students who pursue higher education. We also have recruiting centers in each of the three major metropolitan areas in the state. To assist in planning for the future in these programs, and to address minority enrollment goals set by the state legislature, the need for projections of the minority high school graduates has became apparent.

Special problems are inherent with trying to develop projections of smaller populations with any measure of accuracy. To add to the initial size problem, the data on ethnic enrollment in grades K through 12 is not available from PDE for the non-public schools. To date I have developed four different approaches to making these projections, and plan to continue to analyze the results. As with the county projections, I have developed the models in LOTUS, using downloaded files we extracted on the mainframe and a series of macros. The extracted files for this project include enrollments by race, by grade, by public/non-public schools, for each county, for grades 7 through 12, graduates, and college going graduates. Five years of data is stored on the PC for this system, to make it available for additional types of analysis and reporting. A report of these projections and the historic data is now included in the county projection report. Minority projections are reported only at the state level, not by county.

III. HSG Projections by Penn State Service Areas

Each Penn State campus has been assigned a section of the state as the service area for the campus. These areas may encompass several of the state's 67 counties and often portions of counties as well. Use of the county projections for planning purposes was difficult for some of the campuses where growth or decline in one part of a county did not reflect the actual events in their area. The Undergraduate Admissions Office requested that projections be made by Service Area in order to assist in their marketing and recruitment planning. These projections will also be used in a new enrollment projection model by each PSU campus. In addition, university planners are also interested in studying the historic yields of high school grads to applicants at the service area level to assess the results of recruitment efforts and/or programs changes.

We began this project by analyzing the data needed to satisfy these multiple projects. The projection model was built in LOTUS designed after the county model. All the formulas were entered at development time. Enrollments, graduates and college going grads are summarized on the mainframe by grade and service area. Delimiters are added and the file is imported into the existing spreadsheets. To be consistent, and to use the proven performance of the county projection model, the output of the model is normalized to the total state projections produced by the county model. A report will be distributed to all interested university personnel this year, which will include these data and that from the next project.

IV. Penn State Service Areas Yields from High School Grads

The newest of the projects we have undertaken, was designed to provide data on the relationship between high school graduates, college going graduates, PSU applicants and first-time freshmen at each of our campuses. As the number of graduates has decreased dramatically in some areas of the state, we have been more concerned with at least maintaining the portion of the college going graduate population who apply to the university. Since we also limit the size of the first-time freshmen class at University Park, Penn State Erie, and some of our other campuses, we are also interested in studying data to aid in developing a more productive applicant referral system which will produce the highest yield of enrolled students, and will distribute them across the campuses. Possible future projects include the develop of this work to the high school level.

The methodology we used to produce the tables on high school graduate yields to PSU follows the same lines as the previous projects with the introduction of Penn State admissions information. The high school data used here was extracted from our mainframe PA data files for both this and the service area projection system. Application and first-time data is extracted from our annual application/admissions/first-time enrollment flat file. The ASCII files that are downloaded are then imported into what we call our "raw data" database format. This format is nothing more that a regular LOTUS spreadsheet on the top of which we add unique database names for each field. We are then able to extract the records and fields we want for the particular project using the /Data Query commands.

In addition to reports with the most recent PDE data, we have created four-year reports to provide the longitudinal picture so necessary to analyzing the affect of recruitment efforts, new program offerings, and changing student choice. Plans are to use this data to help analyze the need for additional marketing and recruitment efforts, or possible change of policy or program for campuses.

V. Penn State Enrollment Projections by College

Using high school graduate projections as the basic demographic group for Penn State's first-time freshmen has proved to be the most reliable basis for making our university enrollment projections. In our system the small size of some colleges at a number of the campuses makes projections at both the college and campus levels impractical. This model projects students by level, by college, at four locations; University Park, Penn State Erie, Penn State Harrisburg, and the 17 Commonwealth campuses as a unit, for five years.

The methodology for projecting the demographic group used to drive the model, includes using linear regressions to project the percent of the forecasted high school graduate classes that will be college bound. A system of macros has been developed to move data through the many files and steps of the enrollment model. The initial step of that system copies the high school graduate projections for the state produced by the county projection model, and the latest number of college going graduates from the LOTUS files where they had been produced or loaded from our PA school data files.

The historical relationship between the college going high school graduates and PSU applicants is then calculated and projected using a linear regression for both the Pennsylvania and out-of-state groups. This relationship is often very revealing in its own right for monitoring changes in the mix of in-state and out-of-state students. The impact on tuition income and our goal of providing educational opportunities to Pennsylvania residents are both apparent by these relationships.

VI. Penn State Enrollment Projections by Campus

Using the relationship between high school graduates by service area and the applicants from each service area to each campus is the basis for our campus enrollment projections. In this project we have used the service area grad projections and the average yield ratios to project our future PA applicants. This system is more susceptible to changes in recruitment or program delivery at our campuses, and has therefore been designed to be an interactive model. In the new projection season approaching (late winter), we have named a subcommittee of involved parties to evaluate the relationships and provide input into adjusting these data for proposed changes. We will use the calculated relationships to feed the model which carries the projected applicants through the admission, retention, progression and mobility stages, then work with the input to study the affects of different proposals.

Future Activities

State System of Higher Education

The uses of this data are many, not only by the Chancellor's office but also the individual institutions. One idea that has gotten some good publicity is giving the feeding high school some kind of report on their graduates who attend the university. At the present time this could be done only at the institutional level since the Chancellor's office only has summary data by high schools within county. One plan of sharing how graduates do with the high schools was mentioned in Paul Duby's AIR Professional File 40 published in the Spring of 1991, A Responsive High School Feedback System. The major finding by Paul was that most institutions do not in a routine manner share any information with the feeding high schools. It seems that this would be a very worthwhile activity and could help over the next few years when the numbers of high school graduates are still predicted to continue on a downward course and help the funding schools with their college preparatory courses.

Penn State

Enrollment planning is an important part of preparing all aspects of the university community for the future. As a state-related institution, a large part of our mission is to provide opportunities for the people of the state. While we have had an increase in older students, the majority of our student population is still composed of students who pursue their education in the year following their high school graduation. In order to better direct and refine our recruitment efforts, we have designed many of our projects as a first step in a large scale project to provide yields from recruitment efforts at the high school level to admissions officers and directors. We would like to see the data connected to our prospect file which could help in evaluating the response to various recruitment programs as well. Further development of this system could also provide for the type of high school feedback information that we too feel would benefit both our efforts and the feeder schools.

In developing the way we handle the PA school data, we chose the micro and small summary files as the most usable format for the large majority of the persons who could make use of this data. While we strive to make all relevant information available to all persons involved in the running of the university, our experience has shown that overwhelming responsibilities, lack of support staff, and often equipment, severely hamper the ability to utilize the information. We need input from the parties directly involved with the operation of various aspects of the university to better refine the decision making process, and in return we hope to provide them with data in a useful and usable form.

Conclusions

State System of Higher Education

For the State System universities the year's lag time to get high school graduate numbers from the state of Pennsylvania has made only one basic use of the data. That is in assessing the success or failure of the State System Universities in their recruiting. The System needs to do better in the metropolitan areas of the state. With the present enrollment management system in place, and the schools starting to scale back, it will be hard to press this conclusion on an admission's staff which has recruited 10 years of increasing record enrollments. Some of the schools do an exceptional job of attracting a majority of the college bound graduates to their campuses. The budget cuts and enrollment management could mean changes in where the universities will be recruiting their students in the future. The need to attract and reach specified goals of minority students also mean some new and varied plans for recruitment on the horizon. Additional analysis will be helpful in directing recruitment activities to those areas of the state that will yield the most success with the least expenditure of personnel time and money. This is especially true today.

Penn State

Is the pay-back for the amount of work involved worth the effort? Our feeling is that the uses being made now of the projection data and the yield reports we have produced are well worth the effort. The Office of Budget and Resource Analysis has a base for analyzing future tuition income; the

Office of Undergraduate Admissions has tools to assist its Admissions officers and recruiters across the state; administrators of the University in a number of capacities use the data extensively in strategic planning efforts; and the state is served by a consistent source of projection information. As we progress with this work, we have made the raw data available in several different forms to any Penn State department for development of products to suit their own needs. We feel that we have built a system that will allow us to continue to expand the uses of this data to serve more needs at Penn State and across the Commonwealth.

A College Wide Information System (CWIS) at SUNY Potsdam

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Potsdam College is a liberal arts college in rural northern New York and is a part of the New York State University System. Potsdam has an average FTE of 4200 students with 234 teaching faculty and is home of the Crane School of Music. In addition to its School of Liberal Arts, Potsdam has a School of Professional Studies with a large teacher education program. Potsdam College, like many other institutions of higher education, is struggling with personnel cutbacks and budget cuts.

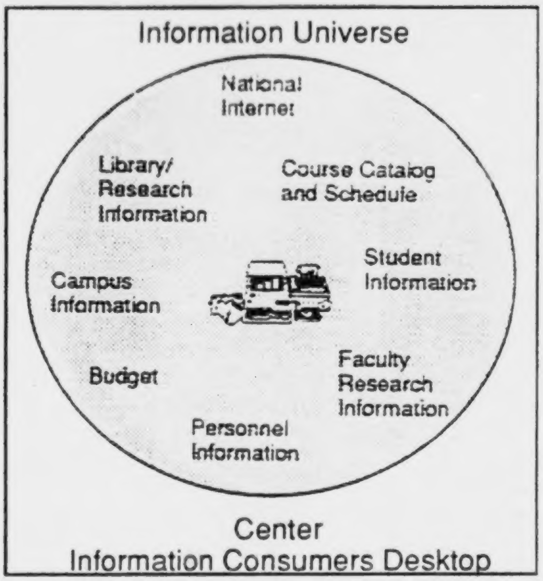
As the College entered the 1990's, its faculty and staff had limited computer access. Hardware included a mainframe computer with a limited number of desktop computers and terminals connected to the mainframe. The network that was in place was a system with very little flexibility and speed. The administrative data (Admissions, Student, Course, Alumni, Bursar, Financial Aid) was housed in separate files on the central computer system. To retrieve data was nearly impossible without a computer programmer setting up the routines and any research using this data was equally difficult to do without help. A locally developed computer program did allow view access to a limited amount of student information on a record by record basis.

The college library did not have much in the way of technology and there was no easily accessible repository for data such as a college calendar, college events, committee reports, faculty research interests, etc.

The historical role of the Office of Institutional Research at Potsdam was to produce and distribute campus reports containing information about students, faculty and courses. There was a suspicion that many of the people who received these reports did not use them. Those people who did use them commented that the data were not always in the format they needed for decision making. Another complaint was that the user had to manually enter the data from the reports into a spreadsheet or database if s/he wanted to manipulate the data or use it for forecasting or trend analysis.

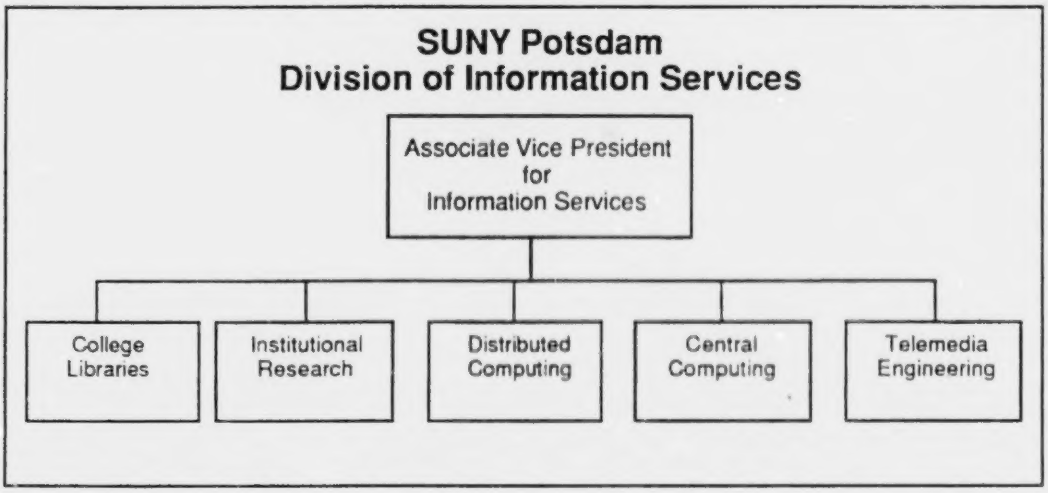
Due to the limitations described above and the need to provide the college community with the information tools that would enable users to "do more with less", the college committed to a new paradigm of information delivery. This new paradigm places the user at the center of the information universe. To achieve this new paradigm Potsdam needed to develop an electronic campus wide information system (CWIS).

Three events happened that facilitated this paradigm shift and had a major influence on the development of Potsdam's college wide information system. The first was the investment in a campus fiber optic network. The College already had made a large investment in desktop computing in the DOS/Windows, Macintosh and VAX VMS environments. It was not feasible to replace all the desktop computers with one standard computer. It was therefore necessary for the new campus LAN to be transparent, flexible and able to connect to each of these computer environments. Thus, Potsdam selected a network with an ethernet backbone that could run TCP/IP. The goal of this installation was to have a network connection at each faculty and administrators desktop and into the many computer labs on campus. Appendix A shows a diagram of Potsdam's current network. This expensive project, completed during the summer of 1992, could not have been done in the current fiscal climate without the support and commitment from the college community and funding from a low interest loan from the State of New York. This expense seems to fly in the face of the "doing more with less" concept, but it was seen by the college as a necessary investment in the future and was justified on that basis.


Information Universe
National Internet
Library/ Research Information
Course Catalog and Schedule
Campus Information
Student Information
Budget
Faculty Research Information
Personnel Information
Center
Information Consumers Desktop

The second event that facilitated this paradigm shift and helped move toward Potsdam's CWIS was an organizational restructuring of the areas that provide information to the college community. During the 1991-92 academic year Institutional Research, the Administrative and Academic Computer Centers, the College Libraries and the Telemedia Department were combined into an Information Services Division.

This division, headed by an Associate Vice President for Information Services, reports to the Vice President of Academic Affairs. It was formed to coordinate the planning for and development of information resources at Potsdam College.


SUNY Potsdam
Division of Information Services
Associate Vice President for Information Services
College Libraries
Institutional Research
Distributed Computing
Central Computing
Telemedia Engineering

Prior to two years ago these offices reported to several different department heads. Each of these departments had its own agenda and did not have a homogeneous focus. By drawing together these sometimes competing departments and exploiting their strengths, a strong division is being developed that can lead Potsdam College's information consumers into the 21st century.

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In this new organizational structure, the Institutional Research Office is reevaluating its role and looking at the strengths it can bring to this division as well as the strengths it can use from it.

The third event that has helped Potsdam develop its CWIS is the investment made in a new administrative software package. Potsdam joined several of its sister institutions in the SUNY System in a SUNY negotiated agreement with the SCT Corporation for its BANNER administrative software. BANNER is an Oracle based, SQL-compatible, relational database segmented into several modules. Potsdam decided to install the Admissions and Recruitment, Student, Finance, Financial Aid and Alumni modules. These interconnected modules house a full range of administrative data from when a student is recruited to the time s/he becomes an Alumni of Potsdam College.

The majority of the cost of this software package was handled by funds from a SUNY wide comprehensive computer upgrade program (CCUP). The cost in dollars and implementation time would not have been possible without the cooperative support of the SUNY units involved.

BANNER Administrative System

Student:
- Course Catalog
- Schedule
- General Person
- Faculty Load Module
- Location Management / Housing
- Admissions
- Recruitment
- General Student
- Registration
- Accounts Receivable
- Academic History
- Degree Audit

Finance:
- Accounts Payable System
- Purchasing and Procurement System
- General Financial Utilities
- Fixed Assets
- Cost Accounting System
- Budget & Position Control
- Accounts Receivable

Alumni:
- Constituents
- Prospects
- Campaign
- Gifts & Pledges

Financial Aid:
- Applicant Processing
- Need Analysis
- Requirements Tracking
- Budgeting
- Packaging and Disbursement
- Funds Management
- Electronic Data Exchange
- History and Transcripts
- Financial Aid Common Functions
- Letter Generation
- Short Term Credit
- Student Employment

The potential of electronic delivery of data with this new administrative software was inviting to the Institutional Research Office. With the installation of the BANNER student information system and the campus network, the Office of Institutional Research began looking for ways to improve its methods of information delivery. The traditional method of delivery of information by printed hard copy reports no longer seemed appropriate. Institutional Research set a goal for itself of providing as much of this information as possible, electronically. To change to an electronic form of information delivery several problems had to be addressed. Among the problems were:

1. Banner's function key orientation.
2. Identifying additional retrieval tools.
3. Training on the use of the data retrieval tools.
4. Security of the database needed to be ensured.

The Banner software, as it comes out of the box, uses many function keys to navigate through the hundreds of screens of information. This is acceptable for offices that use this system on a daily basis for updating/retrieval purposes, but it leaves the occasional information consumer a little disconcerted when trying to do the data retrieval. When this became apparent to the Potsdam community, Institutional Research took on the task of developing a Training and Quick Reference Guide designed for Potsdam's data retrieval needs. Along with this guide, training sessions were set up by Institutional

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Research to teach the newcomers Banner navigation. The Guide and the training sessions not only taught navigational techniques of Banner but also seemed to help reduce some of the frustration felt by the occasional users. Another factor that may eventually help reduce this frustration is the intention of the SCT Corporation to convert its menu driven system to a graphical user interface (the point and click method) of data retrieval.

Banner was also lacking in tools to retrieve data in a format that can be used in the desktop environment. Because of the goal of bringing data to the desktop, Institutional Research took a lead role in investigating over the counter reporting tools that would be user friendly and would fit in Potsdam's networked environment. Institutional Research, with assistance from Central Computing is testing out data retrieval tools such as Easy SQR and DecQuery. Central Computing, with advice from Institutional Research, has also developed routines that can be used by the academic community to generate reports such as class lists, majors report, and course enrollment information from their desktop computers that can then be printed on their office printers.

Security of the administrative database is being handled by the use of user codes and passwords to access this secured database. The only offices that have update capability of this database are the administrative offices that have been assigned as the owners of the various modules of Banner. Everyone else needing this data will be given only view authorization.

The emphasis is now beginning to shift from relying on the IR Office for reports, to relying on the IR Office for training on the retrieval tools and guidance on how to use the data once it is on the desktop computer. By empowering the information consumer, the traditional role of the institutional researcher is taking a back seat to the role of educator and network navigator.

A need was seen by the academic community for additional information in this electronic format. Information such as the college calendar, phone directory and a college events and news. Therefore a network services committee was formed in the Fall of 1991. Institutional Research took a lead role in this committee. Issues dealt with by this committee were:

1. What software will work for our needs and be relatively inexpensive.
2. What data could be housed in this environment.
3. Timeliness of the data.
4. Information ownership and responsibility.

The committee members investigated many pieces of software that might work in our distributed computing environment. One capability that was required was the ability to operate in all the computer environments at Potsdam.

The committee selected a multi-computer environment software called Gopher. Gopher is described by Georgia Southern University as "a client/server distributed information delivery system around which a world/campus-wide information system (CWIS) can readily be constructed. While providing a delivery vehicle for local information, Gopher facilitates access to other Gopher and information servers throughout the world." This information delivery tool is no cost software developed at the University of Minnesota. There are many colleges and universities with some version of Gopher installed (University of Gettysburg, CORNELL University, Georgia Southern University, Carnegie Mellon University, University of Manchester (UK), SUNY's at Buffalo and Plattsburg to name a few). The list of Gopher users is quite extensive and is continually growing throughout the world. Thus, Potsdam can now share information on a global scale.

Gopher is in the implementation stage at Potsdam College. It is envisioned that this system will house the college calendar, the campus directory, college news and events and possibly the college's course catalog.

Potsdam's Office of the Registrar and the Office of Institutional Research are looking at other ways Gopher can be used in their offices to distribute information. Possible uses could be sharing the college course catalog and course schedule in this electronic environment. This is already being done at the University of Gettysburg. The University of Gettysburg also puts a copy of its course tally report and student schedules into Gopher. Hard copy reports such as these, which were once mass produced, are likely candidates to be distributed electronically. Another possibility being explored for Gopher is the housing of Faculty demographic and research information. Recently the Vice-President of Academic Affairs and other faculty and administrators visited the University of Ottawa to explore the possibilities of collaborative research and teaching between our two colleges. Gopher will be used to help lay the groundwork for this cooperative venture.

The access to information brings up the important issues of information privacy and data timeliness and integrity. With the implementation of GOPHER, Potsdam is addressing those issues. The Network Services Committee is developing an information provider agreement that will list out the policies and procedures that are to be used to by the information provider at Potsdam College. This agreement outlines responsibilities and type of information that can be distributed in this format. Appendix B shows a draft of that document. When an information provider wants to use GOPHER they will be shown how to enter their information and they will be issued an electronic information folder which will become their responsibility to maintain. Policies of releasing sensitive data are also being reviewed and looked at from the electronic information distribution viewpoint. There will always be information that should not and will not be put into this type of information format.

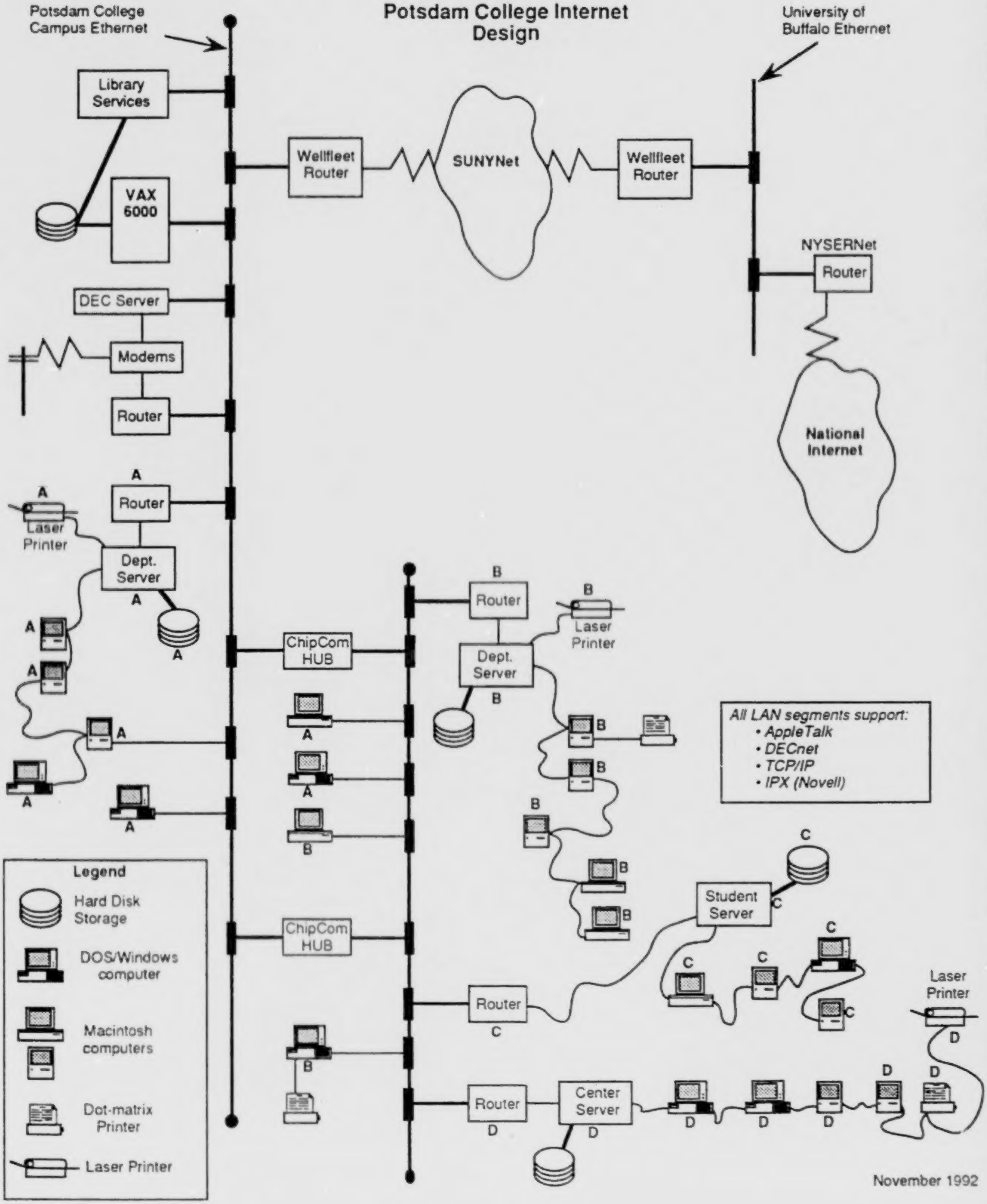
The library is another key component to the CWIS. The library is participating in a SUNY wide Library Automation Implementation Plan (LAIP). Potsdam College's library is in the final testing phases of the LAIP project. This integrated library system includes an on-line circulation system, serials control system and an on-line card catalog. The library staff, as well as members of the computer services area are currently loading and testing the data for this system. The plans are to have an on-line catalog available to the campus community's desktop by the Spring 1993 semester. Another area that the library has used technology is in the use of electronic indexes which are housed on CD ROM. Our library has taken this one step further and has networked these CD ROM Indexes. They are now available in a networked environment for our campus community.

Information providers at Potsdam have always had a service-oriented reputation in the academic community. The impetus of Potsdam's College Wide Information System is the paradigm of putting the user at the center of the Information Universe. The capability to make this happen is being forged at Potsdam. Now, 90% of the academic community is connected to the campus LAN. The campus network is, in turn, connected to the National Internet and the administrative database (Banner). The Gopher information system and the library automation project are in final implementation stages and will also be connected to the campus LAN. Training procedures have been developed on how to use these information tools. And, the enthusiasm of the academic community is infectious.

By reassessing its role at Potsdam College, and taking a leading role in developing the College Wide Information System, Institutional Research became a key player in the design of the future of the College.

Appendix A

Potsdam College Internet Design



Potsdam College Campus Ethernet
University of Buffalo Ethernet
Library Services
VAX 6000
Wellfleet Router
SUNYNet
Wellfleet Router
NYSERNet
Router
National Internet
DEC Server
Modems
Router
A
Router
A
Laser Printer
Dept. Server
A
A
A
A
A
A
ChipCom HUB
A
A
B
B
Router
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Laser Printer
Dept. Server
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ChipCom HUB
C
Student Server
C
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C
C
C
Router
C
B
Laser Printer
D
Router
D
Center Server
D
D
D
D
D
D
Legend
Hard Disk Storage
DOS/Windows computer
Macintosh computers
Dot-matrix Printer
Laser Printer

All LAN segments support:

- *AppleTalk*
- *DECnet*
- *TCP/IP*
- *IPX (Novell)*

November 1992

Appendix B
Potsdam College Campus Wide Information System
Information Provider Agreement
(DRAFT)

1. Definition of Information Provider

An Information Provider (IP) is a faculty, staff, or student member of the campus community who has agreed to be responsible for posting information on a topic or topics for Potsdam College's electronic Campus Wide Information System (CWIS.) The Information Provider may represent an office, department, or group. Each Information Provider will sign this agreement.

2. Responsibilities

The Information Provider agrees to see that the content of the information in topics posted under her or his direction adheres to Potsdam College's computing code of ethics (attached), as well as all applicable College and SUNY rules and regulations. Violators (for example, of copyright rules) will be subject to appropriate penalties. Each Information Provider will be assigned an electronic mail address if he or she does not already have one. The IP agrees to put this e-mail address on every document he or she posts to the CWIS, so that questions on topic content may be directed to the appropriate IP. The Information Provider also agrees to update information in her or his topics as appropriate.

3. Type of Information

Information Providers may request permission to post information on any topic of interest to the college community, as long as the content does not violate the rules and regulations mentioned in 2 above, and as long as the topic has been approved by the CWIS working group (see 5 below.)

4. Format of Information

Electronic only. Each Information Provider will be trained by Distributed Computing staff to post information to the CWIS in the proper format.

5. Requests to Become an Information Provider/Post Additional Topic(s)

Requests to become Information Providers or to post information on additional topics are approved by the CWIS working group. Requesters need to provide their name, address, telephone number, and a description of the type of information they would like to post. The contact person for the working group is ______________________. Approval will usually take less than two days. The CWIS working group will also have responsibility for deciding what off-campus information resources will be made available through the CWIS.

6. Overall Campus Wide Information System Policy

An Information Services committee (with representation from the user community, the library, Distributed Computing, and Administrative Computing) is responsible for setting and revising overall CWIS policy.

I have read this Agreement and the attached Potsdam College Computing Code of Ethics. I agree to abide by them.

Name____

Address - campus____

- home____

Telephone - campus____

home____

e-mail address____

Potsdam College Computing Code of Ethics

Ever user of Potsdam College's computing facilities has the fundamental right to privacy and is entitled to a fair share of resources. It is unethical for any user to violate these principles.

Each usercode and associated password belongs to an individual. All use should be in accordance with Potsdam College policy on computer use set forth in this document. Owners accept the burden for the responsible use of their usercode.

Electronically-stored files are presumed to be private and confidential unless the owner has explicitly made them available to the public.

Use of the network or electronic mail facilities for transmitting anonymous, rude, abusive, harassing, or malicious messages is unethical.

The unauthorized copying of any software that is licensed or protected by copyright is theft and thus unethical.

Although Potsdam College's computing systems and network are not invulnerable to deliberate abuse, knowledge of a special password or any weaknesses in the established security systems should not be used to deliberately degrade Potsdam College's computing systems, its network, personal computers, nor deprive other users of the resources of any Potsdam College- or individually-owned computer.

When necessary for the maintenance of a system or network, Potsdam College Computer Center personnel may restrict availability of shared resources. It may also be necessary to look at a user's files to follow-up on reported problems.

Use of computer resources is a privilege, not a right, and is granted with restrictions and responsibilities for their use. Misuse of College computer resources can result in their revocation.

Use of resources associated with College computer accounts for direct financial gain (e.g. commercial consulting) is unethical.

Violation of the Computing Code of Ethics may subject a user to disciplinary action.

College Women's Performance in a Math-Science Curriculum: A Case Study

Elizabeth S. Johnson, Ph.D.
Associate Director of Admissions
Massachusetts Institute of Technology

The father of a teenage girl raises his hand at a meeting for prospective college applicants and asks whether there are different admissions standards for men and women; a guidance counselor calls to ask why we admitted Jo with a 690 SAT math score but not Joe with a 740. The answer is that once an applicant has scores within a competitive range, admissions staffers look at other pieces of information when making the decision.

Although standardized test scores receive much attention by the press[1], the tests are only one of the pieces of information that applicants are asked to provide to colleges. The press and the public, however, seem to focus on test scores, perhaps because they are more mysterious, not completely predictable and are viewed as having a payoff similar to the lottery. Will Joey win the jackpot? Will he score high enough to be admitted to Dartmouth?

In fact, guidelines provided by the College Board and its test development contractor, the Educational Testing Service, encourage the use of multiple information sources when evaluating an applicant.[2] Most universities that are at all selective in their admissions practices do use test scores, grades, interests and activities when evaluating applicants. The College Board also suggests that admissions staff develop different success predictors for men and for women because of the different score distributions that men and women have. Nationally, in 1991 women scored 56 points lower than men on the SAT math and 1.2 points lower on the ACT math.[3] (Test scores on the SAT range from 200 to 800; on the ACT from 1 to 36.) Since 1972, women have also scored lower than men on the verbal portion of the SAT but the difference is less pronounced: 8 points in 1991. On the ACT English, women scored .9 points higher in 1991.

More Background Information

In an excellent review article, "How does the SAT score for women?", published by the National Coalition for Women and Girls in Education,[4] the authors note that the SAT's are a major gateway to higher education and that women's scores are barriers to these opportunities. They also report that although the SAT's are designed to predict grades in the freshman year, enrolled women who have lower scores than their male counterparts, have higher average high school and college grades. The fast timing of the test and the penalities for guessing, appear to affect the performance of women and men differently, and may be partly responsible for the women's lower scores.

With all the controversy, is there any reason to use the test? Crouse and Trusheim (1988) reviewed published studies and also conducted their own analysis of admissions data at the University of Delaware, and reached the conclusion that the SAT measured something important with respect to potential for educational attainment, but it did not add significant information to that available from other sources, such as high school grades and courses taken.[5]

Given that many colleges continue to require some standardized test as part of the admissions application, what performance differences between men and women do the SAT's predict? Dartmouth researchers Elliott and Strenta examined the performance of men and women within different departments.[6] They found a way to compute a grading index for each department. Based on this index, their data show that women take courses that are graded more leniently and therefore the women receive higher grade point averages. The implication is that if women took courses in science and engineering as frequently as men did, the grade point averages of women would be lower and the relationship with SAT scores would be stronger. In other words, the SAT's would not underpredict the grades of women, if the women took courses that are graded harder, or on a more absolute standard.

The Question

Can a strongly math/science based university, like the one where this study was carried out, feel confident that admitting Jo, with her 690 math score, is as good a decision as admitting Joe with his 740? Do women, with their lower on average math and science scores, perform as well as men when they major in engineering or science programs?

Overview of the Study Population

Given the strength of the applicant pool and the competitiveness in that pool for admission, most students are able to do the work.[7] For the 90% of freshmen who will continue on to receive the bachelor's degree, what is the relationship between standardized test scores and academic performance? Research done in the Admissions Office has shown that SAT scores account for only 5% to 7% of the variability in grade point average at the end of sophomore or senior year.[8] That fact coupled with the low 2 to 3% non-return rate after freshman year suggests that at least within the range of scores that most applicants have, scores are not of overriding importance.

Each of the classes included in the study had approximately 1,000 to 1,050 freshmen: class 1 had 27% women, class 2 had 38%. For both classes, the mean score on the SAT-math for the men was above 700 and also above 700 for the women with about a 21 point difference in favor of the men.[9] On the SAT-verbal, the average scores by gender were within 3 points of each other with the difference favoring the women. The distribution of class rank for men and women was virtually identical with fewer than 15% having a class rank below the top 5%. Women were slightly more likely to be ranked first in their high school class: in Class 1, 31% of the men and 33% of the women were first; in Class 2, 33% of the men and 37% of the women were first.

To reframe the question posed earlier: was the admission of a higher proportion of women applicants in their interest as well as the university's? Was the decision to admit them academically judicious?

For the purpose of this report, a very basic definition of academic success is used: success is defined as "on-time" performance, or the completion of undergraduate requirements within 8 semesters of entry.[10] Another indicator of successful performance, cumulative grade point average, is also considered.

Profile of On-Time Completers

Eighty-three percent of Class 1 completed the requirements for their undergraduate degree within 4 years: the percentage of women completing was 89% versus 82% for the men.[11] In Class 2, 88% of the women and 78% of the men completed the requirements within 4 years. Some people, for one reason or another, might believe that women are less likely than men to complete their undergraduate degrees. They are obviously wrong, as women in both Class 1 and Class 2 have higher 4-year completion rates than do men.

Grade Point Average

Do women and men graduates have similar grade point averages? The mean grade point average for women who completed their bachelor's degree requirements in Class 1 was 4.3 and also 4.3 for the men.[12] In Class 2, the women's grade point average was 4.3 and again 4.3 for the men completers. Women are thought by some to do less well than men. With respect to grade point average they are wrong.

When presented with the evidence of equal grade point averages, some may question the evidence arguing that women major in easier subjects. In Class 1, 87% of all students majored in engineering or science: 89% of the men and 83% of the women. In Class 2, 83% majored in engineering or science: 86% of the men and 78% of the women. Women do more often than men major in something other than engineering or science, but that said, more than three-quarters of the women do major in engineering or science. In addition, all students, whatever their major, are required to pass 8 science classes (as well as 8 humanities, arts and social science classes): five of the science classes are specified: 2 semesters of calculus, 2 semesters of physics, and 1 semester of chemistry.

But to get back to the question of whether men and women achieve different grade point averages within the same majors: in Class 1, the difference in men's and women's grade point averages was not statistically significant for 6 majors; the difference was statistically significant in 1 major with men performing better (see Table 1).[13]

Table 1

Differences in GPA by Gender within Major: Class 1

Majors with at least 15 men and 15 women	Mean GPA Men	Mean GPA Women	Statistical Significance	Mean SAT-M Difference: Men-Women*	Statistical Significance
Aero/Astro	4.2	4.0	$p<.052$	+24	$p<.05$
Biology	4.4	4.3	ns	+31	$p<.05$
Chemical	4.4	4.2	ns	+27	$p<.05$
EE/CS	4.2	4.1	ns	+28	$p<.01$
Materials Science	4.4	4.4	ns	+61	ns
Mechanical	4.2	4.3	ns	+2	ns
Physics	4.5	4.4	ns	+29	ns

*For example, if the mean men's SAT-Math score is 653 and the mean women's is 652, the number in this column will be +1.

In Class 2, in the 6 majors that had at least 15 men and 15 women, the difference between men's and women's grade point averages was not statistically significant in 5; the difference was statistically significant in 1 major (see Table 2).[14]

Table 2

Differences in GPA by Gender within Major: Class 2

Majors with at least 15 men and 15 women	Mean GPA Men	Mean GPA Women	Statistical Significance	Mean SAT-Math Difference: Men-Women	Statistical Significance
Aero/Astro	4.2	3.8	p<.01	+ 30	p<.05
Architecture	4.3	4.3	ns	+ 34	p<.05
Biology	4.3	4.3	ns	+ 66	p<.01
EE/CS	4.2	4.1	ns	+3	p<.01
Materials Science	4.1	4.4	ns	- 35	p<.05
Mechanical	4.1	4.3	ns	- 2	ns

We can conclude that for the vast majority of undergraduates who have been awarded their degrees or who have completed the undergraduate requirements within a 4-year period, there is virtually no difference in the grade point averages of men and women even within the same majors.

Conclusion

On the basis of their high school grades, the performance of the women in this study is no surprise. Women obtain as good or better grades than their male counterparts in high school. However, because women's standardized admissions test scores are on average, lower than those for men, sometimes women are expected to do less well than men in college.

The results presented for the men and women at this highly selective university cannot be generalized to all college students, but they are indicative of what women can achieve in a math/science environment that is demanding, and to a large extent both supportive of academic achievement and gender blind. Students and faculty for the most part do not define math and science based study and achievement by women as unfeminine.

Is it worth taking "risks" on women applicants to schools with strongly math/science based curriculums even when their standardized test scores are on average lower than those of men applicants? Yes. By the end of 4 semesters women and men should be achieving on average fairly equivalent grades even in the same majors. If they are not, the university should examine its treatment, both overt and subtle of its women and not resort to finding the excuse within score data that were obtained when the women were in high school, an environment much less likely to foster confidence in women with regard to math and science ability.[15]

Footnotes

[1] "SAT scores go down", Boston Globe, Aug. 27, 1991.

[2] See The College Board Handbook for the Scholastic Aptitude Test and Achievement Tests, Chap. 3 "The Scholastic Aptitude Test," Thomas F. Donlon (Ed.), CEEB, NY, 1984 pp. 37-68.

[3] Both the Scholastic Aptitude Test (SAT), administered by the Educational Testing Service in Princeton, NJ and the American College Testing Assessment (ACT), administered by the American College Testing Program in Iowa City, IA are used to screen applicants for college admission. Some regions of the country primarily use the SAT while other areas use the ACT. Many colleges and universities will accept either test although the tests do not measure exactly the same things. The data for the SAT's are taken from "1991 Profile of SAT and Achievement Test Takers: College Bound Seniors, National Report." The data for the ACT are taken from the "The High School Profile Report: H.S. Graduating Class 1991."

[4] c/o National Women's Law Center, 1616 P Street, Suite 100, Washington, DC 20036, July, 1990.

[5] The Case Against the SAT by James Crouse and Dale Trusheim, Univ. of Chicago Press, Chicago, 1988.

[6] Rogers Elliot and A. Christopher Strenta, Journal of Educational Measurement, v. 25, 1988, pp. 333-47.

[7] Seven years is used because if a student finishes the undergraduate requirements, it is almost always within 7 years.

[8] At this university, the freshman year is graded as pass/no credit and transcripts contain only that information. As a result, correlations of SAT scores and freshman grades are not usually done.

[9] The difference was statistically significant at $p<.01$.

[10] The term "completion of undergraduate requirements" is used rather than receipt of bachelor's degree, because undergraduates can move on to a fifth year master's program and be awarded both their bachelor's and master's degrees at the same time.

[11] Although a higher proportion of men may be involved in 5-year programs in which a bachelor's and a master's degree are awarded at the end of 5 years, students are considered "completers" either if they have been awarded their diplomas or if they have completed the degree requirements and are enrolled in a joint bachelor's/master's program.

[12] Mean grade point average is the student's cumulative grade point average when s/he completes the bachelor's degree requirements. An "A" average is 5.0.

[13] Those 7 majors that had at least 15 men and 15 women were selected for analysis using t-tests to determine whether the mean grade point average within majors was different statistically for men and for women. Majors with fewer than 15 men and 15 women were grouped together as "other engineering" or as "other science" or as "other". The difference between the men's grade point average and the women's in all 3 "other" cases was not greater than .2 cumulative points and no difference was statistically significant.

[14] Again, all the majors that had fewer than 15 men and 15 women were grouped together either as "other engineering", as "other science" or as "other". In all cases the differences were no greater than .2 and were not statistically significant.

[15] See the New York Times, "Bias against girls is found rife in schools, with lasting damage," Wednesday, Feb. 12, 1992, p. 1.

A Comparison of Influences on Grading Practices of Faculty at Two-Year and Four-Year Institutions

Thomas P. Judd
Director of Institutional Research
Rockland Community College

This study examines and compares the use of formal evaluation methods, the types of skills reflected in final grades, the sources influencing course objectives, and attitudes toward grading of faculty at two-year and four-year institutions. Results revealed few differences in reported practices and attitudes.

Community colleges serve as the first college experience of many students who then transfer to four-year institutions. The transferability of credits earned at the community college is an issue frequently raised by individual students, institutions and state agencies. Concerns about grade inflation, comparability of course content, consistent application of academic standards, and student academic success on transfer has generated an interest in the relative value or meaning of grades transferred to the receiving institution.

The issue of comparability of grades has received some attention in the literature. Rachal (1984) compared the grades assigned by faculty who taught freshman English at a state university and at three community colleges on the same five student themes. Results showed that while the state university faculty graded the themes one grade lower on average than the community college faculty, there was a considerable ranges of grades for each theme. Three of the five themes had grade ranges of A to F by faculty at both institution types. This variability of grading ranges may differ from discipline to discipline. In addition, in examining the criteria English faculty in university and community colleges settings reported to use, Bogart and Kistler (1987) found few differences, except for a more stringent adherence to deadlines and due dates at the university setting.

In examining the attitude toward grading, Geisinger and Rabinowitz (1979) identified three orientations of university faculty: **criterion-referenced**, in which student academic performance is compared to existing standards; **norm-referenced**, in which student academic performance is judged relative to the performance of peers, usually in the class in which the student is a member; and **self-referenced**, in which each student is evaluated relative to the abilities, past performance and motivation of the individual student. In a construct validation study, Geisinger, Wilson and Naumann (1980) found that university faculty were more norm-referenced in orientation, while community college faculty favored the self-referenced perspective.

However, grades students receive represent not only grading attitudes and standards, but are also a product of the type of formal evaluation methods chosen, the type of skills that are expected to be applied to the content, and the development specified course objectives.

To examine the comparability of courses between institution types, a preliminary unpublished examination of course outlines and catalog descriptions of introductory courses from seven two-year colleges and six four-year institutions in New York State was conducted for courses in English Composition I, Management, Intermediate Algebra, Statistics, Spanish I, General Biology I & II, General Psychology and Speech I. Due to differing methods of describing courses in the various institutions, complete information was not always available for every course. However, a subjective comparison by faculty in each area found a high degree of similarity in the following categories: course justification, catalog description, competencies to be learned, outlines of content, specific learning activities, criteria for evaluation, texts and evaluation methods. Given this similarity, the question remains as to the comparison of the application of the various aspects of the grading process that are directly under the faculty members' influence by faculty at two-year and four-year institutions in a variety of academic areas.

The most general question addressed by this study was: Do grades assigned by two-year college faculty reflect similar mastery of content and skills, personal growth or achievement relative to peers as do grades in four-year institutions? This question was addressed by several related questions: What are the relative contributions of various formal evaluation methods in determining final grades for introductory courses? To what extent do students' final grades reflect six types of cognitive skills? How do non-academic circumstances affect standards for grading? How important are various influences in determining course objectives? What are faculty attitudes toward grading practices? How important are various influences in determining grading standards?

Method

Subjects

Instructional Vice Presidents at seven community colleges in New York State and six four-year institutions agreed to ask their full-time faculty who taught introductory courses in one of the eight academic areas examined in the preliminary study to complete the instrument. One-hundred-eighty usable questionnaires were received from the seven community colleges, and 31 were received from the four-year institutions. Table 1 lists the number of respondents by institution and teaching department.

Instrument Development

The survey was developed by revising a pilot survey administered in the Fall 1990, designed to identify factors faculty felt were important in determine grades, and adding some items from the Faculty Orientation Toward Grading Inventory (Geisinger, 1980). The 45 item survey had items in five general categories: formal evaluation methods, influence of specific student skills on grades, influence of non-academic circumstances on grades, influences on determining course objectives, and attitudes toward grading factors. The attitudes toward grading items were selected from the Faculty Orientation Toward Grading Inventory and indicate faculty use of individual student growth versus student ranking within peers versus predetermined goals or standards as a basis for assigning grades. Based on factor analysis results, items were selected which had the highest loading on the three factors measuring the three orientations to grading.

Results

Table 2 presents comparative mean scores for faculty respondents from two-year institutions and four-year institutions for each item.

Formal Evaluation Methods

Of the ten options listed for formal evaluation methods, written work, performance on essay tests and performance on objective tests were reported by all faculty to have the greatest contribution in determining final grades for students in introductory courses. Several t-test comparisons, with an alpha level selected at .05, showed significant differences (t=2.92, p=.006) between two-year college faculty (M=6.98) and four-year college faculty (M=4.87) for the contribution of written work, extra credit (two-year M=2.15, four-year M=.87, t=3.46, p=.001), attendance (two-year M=4.36, four-year M=2.84, t=2,58, p=.014), punctuality in handing in assignments (two-year M=4.40, four-year M=2,87, t=2.33, p=.025), and daily preparation (two-year M=4.72, four-year M=2.97, t=2.54, p=.015).

Cognitive Skills

Of the six types of cognitive skills presented, all faculty combined reported that critical thinking skills, practical applications of theory and factual knowledge were most reflected in students' final grades, followed by problem solving and creativity/originality. Comparisons by t-test showed significant differences for critical thinking skills (two-year M=7.59, four-year M=5.74, t=2.97, p=.005), and creativity/originality (two-year M=6.63, four-year M=3.94, t=2.75, p=.009).

Non-academic Circumstances

The percentages of the accommodations in grading two-year and four-year faculty report adopting for various personal circumstances of students are presented in Table 3. Statistical comparisons were not conducted for these categorical items.

Course Objective Influences

All faculty combined reported that the most important influence in determining course objectives was their own experience, followed by the department, the college, standards of other colleges and national or regional organizations. By t-test comparison, differences between two-year faculty (M=7.64) and four-year faculty (M=6.29) were shown in the importance of the department in determining course objectives (t=2.16, p=.038).

Attitude Towards Grading

An examination of the responses to the attitude towards grading items shows that all faculty agreed most strongly with item 31 (Grades should reflect the degree to which a student has achieved the course objectives), item 30 (Before a course begins, a professor should have already determined the criteria used to grade students), and item 44 (Returning adult students generally do better academic work). Faculty disagreed most with item 32 (Grading using the "curve" is the best way to evaluate student performance), item 42 (Students who appear unkempt and disheveled generally do poor academic work), item 34 (Current higher education would be improved if professors never had to grade students), item 37 (I am an easy grader), item 38 (An intro course is a place to weed out the students with low potential), and item 39 (I grade more generously in lower level/intro courses).

Comparisons between two-year faculty (M=2.69) and four-year faculty (M=3.32) showed differences (t=2.45, p=.019) on item 28 (The student who advances his or her knowledge the most in a class deserves the highest grades), on item 43 (Students who develop a good rapport with me generally receive good grades, two-year M=2.33, four-year M=1.87, t=2.20, p=.034), and item 44 (Returning adult students generally do better academic work, two-year M=4.14, four-year M=3.45, t=2.74, p=.009).

Supplementary Analyses

Factor analysis and comparisons of two-year and four-year faculty on resultant factor scores and discriminant analysis with institution type as dependent variables did not add to the interpretation of the results and generally support the results already presented.

Discussion

Earlier studies have shown that two-year college and four-year college faculty differ in their approach to grading when looking at the importance of individual student growth, achievement of predetermined objectives, and student performance in comparison to the rest of the class (Geisinger, 1980). Perhaps the most significant results of this survey show that for the colleges in the sample, two-year college faculty and four-year college faculty showed considerable similarity in their use of formal evaluation methods, the types of skills reflected in final grades, the sources influencing course objectives, and attitudes toward grading.

Where differences existed between two-year and four-year institutions, the differences are somewhat consistent with earlier findings. Two-year college faculty placed more importance on the types of grading practices and skills which require more consideration and contact with individual students. It is possible that most of these differences may be attributable to differences in class sizes in two institution types. Introductory level courses often have large numbers of students in some institutions. The smaller class sizes typical at community colleges are more conducive to providing attention to individual student progress and needs, and a more nurturing educational atmosphere. Thus, there seems to be congruence between the practice and attitudes toward grading of two-year college faculty and the college mission of meeting the diverse needs of its students. However, to more fully understand the skill levels and academic achievement represented at the two institution types, an examination similar to Rachal's (1984) comparison of grades assigned by faculty given the same performance of students would be illuminating, especially if conducted in numerous content areas.

While these findings are encouraging in assessing the relative meaning of grades across institutions by these positive results, the question of transfer student success also remains. Does an educational atmosphere which stresses accommodation and support of individual student needs have undesired consequences upon students' transferring to other institutions? Are students empowered with the full range of skills they need to succeed at a four-year school, which, in addition to classroom performance, includes coping with many other facets of life? Anecdotal evidence from transfer students and limited data from a few transfer institutions indicates that this is a problem worthy of investigation. An examination of the success of transfer students and the availability and utilization of support services for them at transfer institutions, may begin to provide a fuller picture of the factors involved in successful transfer of students from two-year colleges to four-year institutions.

Table 1

Number of Respondents by Department and Institution

	Department						
Institution	Business	English	Spanish	Math	Social Science	Science	Psychology
Rockland Community College	2	18		3	1	5	
Duchess CC	2	9		4	3	2	
La Guardia CC		3		1	1	1	
Monroe CC	3	5	1	4			1
Nassau CC	2	37	3	14	3		6
Orange CC	3	8	1	2	2		3
Westchester CC	3	9	1	3	2	2	1
SUNY Binghamton		1		2	3		2
Dominican		2	1	1	1		1
Pace Dyson		3	1	1	3		2
Pace Lubin	3						
Ramapo		1		1	1	1	
Two-Year Total	15	89	6	31	12	5	16
Four-Year Total	3	7	2	5	8	1	5
Grand Total	18	96	8	36	20	6	21

Department Unknown (all from community colleges) 6

Table 2

Mean Scores of Faculty at Two-Year Colleges and Four-Year Institutions

Formal Evaluation Methods

Please indicate the contribution of the following factors you use in determining final grades in introductory courses.

	Two-Year Colleges	Four-Year Institutions	t-test Results
Score Range: None=0 A Great Deal =10			
1. Performance on objective tests	5.33	6.45	
2. Performance on essay tests	5.76	4.48	
3. Written work	6.97	4.87	p=.006
4. Practical/technical performance	3.34	2.42	
5. Oral presentation	2.90	2.39	
6. Extra credit	2.15	0.87	p=.001
7. Attendance	4.36	2.84	p=.014
8. Punctuality in handing in assignments	4.10	2.87	p=.025
9. Daily preparation	4.72	2.97	p=.015
10. Class participation	4.91	4.10	

To what extent do your students' final grades reflect the following?

	Two-Year Colleges	Four-Year Institutions	t-test Results
Score Range: No Impact=0 A Great Deal=10			
11. Factual knowledge	6.71	6.90	
12. Practical application of theory	7.39	6.90	
13. Critical thinking skills	7.59	5.74	p=.005
14. Problem solving skills	6.60	5.74	
15. Creativity/originality	5.63	3.94	p=.009

How do the following circumstances affect your standards for grading? (You may choose more than one response for each item)

17. Learning Disabilities
18. Extenuating personal circumstances (See Table 3 for a summary of this section)
19. Non-native English speaker
20. Physical handicaps
21. Other perceived educational disadvantage

Please indicate the importance of each of the following in determining your course objectives:

	Two-Year Colleges	Four-Year Institutions	t-test Results
Score Range: No Effect =0 Very Important =10			
22. My own expertise	8.42	8.32	
23. The department	7.64	6.29	p=.038
24. The college	6.07	5.71	
25. Standards of other colleges	5.28	4.10	
26. National or regional organization	3.80	3.35	

Rockland Community College

Table 2 (Continued)

Attitude Towards Grading

	Two-Year Colleges	Four-Year Institutions	t-test Results
Score Range: Strongly Disagree=1 Strongly Agree=5			
28. The student who advances his or her knowledge the most in a class deserves the highest grade.	2.69	3.32	p=.019
29. A professor should take a student's effort into account when grading.	2.87	2.90	
30. Before a course begins, a professor should have already determined the criteria to use to grade students.	4.41	4.23	
31. Grades should reflect the degree to which a student has achieved the course objectives.	4.54	4.52	
32. Grading using "the curve" is the best way to evaluate student performance.	1.78	1.77	
33. Grading in a course should indicate a rough ranking of the students in that course.	2.80	3.26	
34. Current higher education would be improved if professors never had to grade students.	2.11	1.74	
35. Grading students leads to their becoming highly motivated, and hence accomplishing more.	3.20	3.13	
36. Since I began teaching, I have had to revise my standards downward.	3.12	2.97	
37. I am an easy grader.	2.26	1.97	
38. An intro course is a place to weed out the students with low potential.	2.43	2.19	
39. I grade more generously in lower level/intro courses.	2.15	1.90	
40. Students who sit in the front of the classroom are more highly motivated students.	2.57	2.61	
41. Students' inappropriate behavior should be reflected in their grades.	2.43	2.42	
42. Students who appear unkempt and disheveled generally do poor academic work.	1.75	1.71	
43. Students who develop a good rapport with me generally receive good grades.	2.33	1.87	p=.034
44. Returning adult students generally do better academic work.	4.14	3.45	p=.009

45. Please rank the following items in their order of importance in determining your grading standards. Use '1' for the most important and '5' for the least important. If you think several items are of equivalent importance, give them the same rank.

past experience with other classes	2.47	2.32
average ability of current class	3.19	2.84
externally determined standards (department, national organization, etc.)	2.93	2.83
my own criteria	1.45	1.29

Table 3

Items 17 to 21: Percentages of Responses by Faculty at Two-Year Colleges and Four-Year Institutions

How do the following circumstances affect your standards for grading? (You may choose more than one response for each item)

	No Influence	
	Two-Year Colleges	Four-Year Institutions
17. Learning disabilities	25.8	38.7
18. Extenuating personal circumstances	28.0	35.5
19. Non-native English speaker	31.1	51.6
20. Physical handicaps	30.3	48.4
21. Other perceived educational disadvantage	21.2	16.1

How do the following circumstances affect your standards for grading? (You may choose more than one response for each item)

	More Lenient Standards	
	Two-Year Colleges	Four-Year Institutions
17. Learning disabilities	24.2	9.7
18. Extenuating personal circumstances	28.8	22.6
19. Non-native English speaker	28.8	9.7
20. Physical handicaps	26.5	3.2
21. Other perceived educational disadvantage	10.6	3.2

How do the following circumstances affect your standards for grading? (You may choose more than one response for each item)

	Other Accommodations	
	Two-Year Colleges	Four-Year Institutions
17. Learning disabilities	47.7	41.9
18. Extenuating personal circumstances	41.7	35.5
19. Non-native English speaker	37.1	38.7
20. Physical handicaps	40.9	45.2
21. Other perceived educational disadvantage	16.7	16.1

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Predictors of Retention for Community College Students: Student and Program Characteristics

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Introduction

Of all types of colleges, public two-year or community colleges consistently show the highest dropout rates. Compared to the 44% completion rate for four-year institutions, less than 30% of community college students will persist over a two-year period in the institution in which they first register (Tinto, 1987). In contrast to selective colleges and universities, community colleges share both student and environmental attributes associated with high student attrition: students with relatively low ability and less motivation, higher proportions of married and older students, no residential facilities, limited on-campus job opportunities and financial aid, and fewer opportunities for involvement in extracurricular activities (Astin ,1975).

Correlates of attrition have been found among both student and institutional variables. Student demographic variables, for example, point to students who are older, female and non-white as being particularly at risk for terminating their education prior to completing degrees (Lenning, 1982). In addition, students with weaker academic records and less clearly defined career goals, often planning to spend fewer years in school, are more likely to discontinue their studies prematurely (Tinto, 1975; Munro, 1981; Pascarella and Chapman, 1983; Bean and Metzner, 1985). Student intent has been of particular interest to researchers two-year colleges, where a large percentage of students enroll with no plans to seek a degree, and has been found to relate significantly to retention rates (Rogers and Pratt, 1989). While the explanatory model proposed by Tinto (1975) has wide applicability, factors influencing student enrollment and persistence patterns are institutionally specific (Tinto, 1987); institutions wishing to impact retention and attrition patterns among their own students benefit greatly from careful analysis of institutional enrollment data, rather than relying exclusively on the results of more general research.

Organizational factors such as the type, size, control (public vs. private) and selectivity of the institution have also been linked empirically to student retention (Astin, 1975; Beal and Noel, 1980; Lenning, 1982; Pantages and Creedon, 1978; Tinto, 1975). Findings regarding institutional size vary widely; some suggest that size has no effect on retention, while others show either smaller or larger institutions with higher retention rates. Results showing associations between institutional type, control and selectivity are more consistent. By and large, researchers have reported that four-year institutions have higher retention rates than two-year institutions, privately supported institutions have higher retention rates than publicly supported institutions, and more selective institutions have higher retention rates than less selective institutions.

The benefits of measuring how the characteristics of an institution affect the educational persistence of its students can be substantial. While the organizational factors that have received the most attention--size, control, selectivity--are relatively fixed, other characteristics of institutions are more malleable. The characteristics of programs within an institution, some of which mirror the inter-institutional differences that have been the subject of retention research, might also be expected to have an impact on students' educational persistence and success. In this context, institutions hold the power to change some of their attributes to enhance student retention.

The research reported here was undertaken as an exploratory study to identify factors related to student attrition/retention at a comprehensive community college. Institutional factors that were open to change, as well as student characteristics that could help identify at-risk students, were of particular interest. Previous institutional research at Massasoit indicated that completion rates vary significantly according to academic program. This study explores the ways in which program variables such as size, selectivity, full-time faculty to student ratios, and curricular requirements may account for variation in student retention, and interact with student characteristics related to persistence and program completion.

Methodology

Massasoit has conducted a number of studies of the reasons why students leave college before graduation, including exit interviews with students formally withdrawing from the college, and periodic surveys of non-returning students. This research has provided some insights into the immediate reasons why individual students leave, but has not provided understanding of the more general patterns of student persistence. A longitudinal study of student enrollment patterns and academic performance was undertaken in an attempt to develop both a model of persistence and a profile of students who were more (or less) likely to complete degree programs at the college. The study was conducted over a period of three years, which is 150% of the time required to complete an associate degree at Massasoit, if enrolled full-time. Previous retention research at the college shows that over 80% of the students who will ever graduate do so in that time period.

Research Sample

Because this research took a comprehensive approach to studying retention, including a large number of variables and tracking students over the course of three years, a manageable sample size was needed. A sample consisting of approximately 20% of students attending orientation sessions for the fall 1989 semester was randomly selected from institutional research data files of entering student questionnaires. The original sample of 410 students was reduced to 392 by eliminating cases with no records in the college's student information system for the social security number given. In addition to first-time freshmen, this group includes a significant number of transfer students from other institutions, and students who were re-entering Massasoit after one or more semesters not enrolled. Fifty-five percent male, 89% percent white and with a mean age of 21 years, the largest proportion of the sample was enrolled in a transfer program (34%), followed by business (28%), service (15%), technical (11%), health care (8%) career programs, and finally, the developmental studies program (5%). Sixty-seven percent of the sample named a specific career goal, and 45% ultimately planned to obtain a four-year degree. Roughly 59% planned to work more than 15 hours per week while enrolled. This sample proved to be generally representative of the total population of students who began their studies in the fall of 1989. It should be noted that this study includes only students enrolling in the college's regular day school program. The state of Massachusetts makes a clear distinction between programs offered during the day and evening, treating the latter as completely separate operations, which receive no state support. Massasoit's institutional research office's normal functions are limited almost exclusively to the day division. As a result, the research sample is representative only of the more traditional segment of the college's student population (although it does include many "non-traditional" students), who are somewhat more likely as a group to complete a degree than are evening "continuing education" students.

Data Sources

For the past several years, data on backgrounds, goals, and academic support needs have been collected from all incoming students at summer orientation sessions, using an institutionally designed instrument. Information generated by this study has been used to track changes in the characteristics of entering classes, as well as to provide services that meet students' expressed needs. These institutional research data were utilized in this study to develop a more complete picture of the factors influencing persistence than could be gained from the college's student information system alone. Sample students were tracked through the student information system for a total of six semesters, through June, 1992;

data on enrollment and academic performance were added to the research file each term. Data elements for each semester consisted of numbers of attempted and earned credits, grade point averages, number of failing grades, program enrolled, and degree completion. Admissions and enrollment records were used to obtain data on program enrollment, average graduation rates, full-time faculty to student ratio and selectivity of each academic program.

Measures of Persistence and Academic Performance

A number of measures of persistence and academic performance were selected as key indicators for this study. While the final measure of persistence may be graduation, interim or alternate measures were also utilized, since a minority of community college students actually achieve this end, even when their initial goal consists of earning a degree. In addition to degree completion, educational persistence is operationalized in two ways: total number of semesters enrolled, with enrollment consisting of any attempted credits shown on student transcripts for a semester; and total credits completed with a passing grade for all semesters enrolled during the study. Academic performance was measured primarily by grade point averages, both cumulatively and for individual semesters. Because of some peculiarities and changes in the way that GPA was calculated during the period of this study, two other academic indicators were also included: the number of failing grades each semester, and the ratio of earned to attempted credits. This latter variable serves as an indicator of both performance and persistence; it reflects courses from which students withdrew during the course of a semester, as well as those for which they received failing grades. Strong correlations were found between the various measures of persistence and performance, as shown below:

Variable	Total credits	Total semesters	% Credits completed
Total credits	--	.84	.65
Total semesters	.84	--	.35
% Credits completed	.65	.35	--
Average GPA	.48	.23	.83

Findings

By the end of the six semester period during which the research sample was tracked, 25% of the original cohort had graduated; 3% were still enrolled; and 72% had left the college without completing a certificate or degree. The table below presents a flow model for student enrollment across the six semesters. Students are considered to have completed a semester when they complete any of the courses for which they register with a grade of 'D' or greater. Semester survival rates are calculated using all those registered as the total population; cohort survival is calculated using the original entering cohort as the denominator.

Table 1
Cohort Survival, Fall 1989 Entering Students

Semester	Register	Complete	Do not Complete	Semester Survival	Graduate	Cohort Survival
Orientation	392					
Fall 1989	356	318	38	89%	–	81%
Spring 1990	288	248	40	86%	11 (3%)	63%
Fall 1990	172	162	10	94%	–	41%
Spring 1991	152	140	12	92%	41 (10%)	36%
Fall 1991	99	86	13	89%	–	22%
Spring 1992	61	55	6	90%	45 (12%)	3%

Bivariate Analysis

Student and program characteristics which previous research suggests are related to retention and persistence were examined through a series of bivariate analyses to determine their relevance for Massasoit students. Student variables included demographic factors (age, gender, ethnicity); educational goals and plans (reason for enrollment, degree intentions); academic background (high school GPA, placement test scores, admissions status); and expressed needs for academic support. Program factors include program type and size; ratio of students to full time faculty; admissions selectivity; relative academic rigor; and number of program electives. Bivariate analyses included cross-tabulation of categorical variables, and correlation and one-way analysis of variance for continuous measures. Table 2 below summarizes differences in the various persistence and performance measures that were found in relation to student variables.

Table 2

Persistence by Student Characteristics and Goals

	% Graduated	Mean Total Credits	Mean Semesters	Mean GPA	Mean % Credits Earned
Men	16.7%***	26.8	2.9	2.11*	68%*
Women	34.1%	28.3	3.0	2.47	75%
Under Age 20	18.6%***	29.2*	3.1	2.04*	68%**
Age 20-25	22.5%	23.2	2.5	2.36	70%
Over Age 25	50.9%	30.2	3.5	3.17	85%
Minority	17.9%	20.6*	2.5	2.11	65%
White	24.8%	28.2	3.0	2.31	72%
Goals					
Job Skills	33.3%*	30.0*	3.1	2.39*	75%*
Transfer	18.9%	26.8	3.0	2.17	69%
Personal Int.	22.2%	19.3	2.2	2.20	64%
Basic Skills	26.9%	26.3	3.0	2.53	75%
Degree Plans					
Associate	1.5%*	27.7	2.9	2.39*	72%*
Certificate	25.0%	25.0	2.4	2.50	78%
Transfer with no degree	15.7%	28.2	3.1	2.45	72%
Courses only	0.0%	25.8	2.8	3.04	84%
Undecided	17.1%	27.7	3.1	1.92	64%
Adm. Status					
Freshmen	19.4%*	27.7	3.0	2.11***	68%***
Transfers	39.1%	30.4	3.0	2.80	85%
Re-admits	38.0%	23.5	2.7	2.41	70%
Study Skills					
Need help	18.5%*	26.6	2.9	2.10**	66%**
Need no help	28.5%	28.3	3.0	2.38	75%

*p<.05 **p<.01 ***p<.001

Analyses of continuous variables revealed weak to moderate correlations between student background characteristics and measures of academic performance and persistence, for the first semester, first year, and all semesters enrolled. In addition, performance in the first two semesters enrolled showed moderate to strong association with overall performance and persistence. Tables 3 and 4 display these relationships.

Table 3

	Age	HS GPA	Reading score	Arithmetic score
First Semester				
% completed	.17	-.12	.17	--
GPA	.26	-.22	.30	.12
First Year				
% completed	.21	-.18	.20	.14
Cum GPA	.34	--	.39	.16
All semesters				
Total credits	--	--	--	--
% completed	.19	-.19	.17	.18
Average GPA	.28	-.23	.29	.20

Table 4

	Total credits	% Completed	Total Semesters	Average GPA
First Semester				
Attempted Credits	.34	--	.27	-.16
Semester GPA	.50	.69	.41	.82
% Completed	.56	.84	.38	.70
First Year				
Cumulative GPA	.42	.74	.22	.87
% Completed	.64	.94	.39	.80

As had been suggested by previous retention research at Massasoit, students' persistence and academic performance varied significantly according to the type of programs in which they were enrolled. Students in health related career programs, which are quite selective, scored highest on all measures of persistence and performance. Further analysis revealed that when students enrolled in these programs were omitted, differences between other types of programs became statistically insignificant.

Table 5

Persistence by Program Type

Program Type	% Graduated	Mean Total Credits	Total Credits Earned	Mean GPA	Mean Semesters
Transfer	19.2%	24.7	66%	2.20	2.9
Business	22.4%	24.7	67%	2.25	2.7
Technical	21.4%	33.5	77%	2.40	2.8
Health	73.3%	35.3	87%	2.96	3.4
Service	21.1%	31.1	74%	2.21	3.3
Developmental	15.0%	27.3	82%	2.70	3.2
All Programs	24.5%	27.6	71%	2.27	3.0

Programs can be classified on a number of dimensions other than discipline. Factors which were hypothesized to have associations with student persistence included program size (total enrollment), student to full-time faculty ratio, selectivity, academic rigor, and curriculum structure. These variable were operationalized as follows: size, fall 1989 enrollment; student/faculty ratio, fall 1989 enrollment/number of full-time faculty; selectivity (dichotomous), either open enrollment or selective; rigor, four point scale based primarily on required math and science levels; and structure, number of elective and/or sequential courses. Analysis of program variables proved somewhat disappointing, although weak associations were found between program characteristics and outcome measures. Program size was shown to correlate negatively with percentage of credits completed (-.15, $p<.005$), total credits completed (-.13, $p<.01$), and average GPA (-.11, $p<.05$). Number of electives allowed in a program's curriculum also correlated negatively with outcome measures: percentage of credits completed (-.19, $p<.001$), total credits earned (-.16, $p<.01$), total semesters enrolled (-.11, $p<.05$), and average GPA (-.14, $p<.01$). Weak correlations were also evidenced between program rigor and both total semesters enrolled and total credits earned (.11, $p<.05$).

Multivariate Analysis

A series of stepwise multiple regressions were performed to develop models that might explain variation in performance and persistence. This analysis was completed for both continuous measures of persistence--total number of credits, and total percentage of credits completed--and for the average GPA over all semesters enrolled. The analyses utilizing only background data were able to explain less than 20% of the variance in either performance or persistence. Age, high school grade point average, and reading placement test scores had some predictive value for academic performance as measured by average GPA (adjusted R square=.14688) and by percentage of credits completed (adjusted R square=.07770). Only age and the number of credits attempted in the first semester enrolled contributed to an explanation of variance in total credits earned (adjusted R square =.09396).

The addition of academic data (GPA, percentage of credits completed) from first semester enrolled vastly increased the explanatory power of the regression model. The table below presents regression analysis utilizing these variables along with background data.

Table 6

Equation number 1: Dependent Variable, Total Credits Completed

Analysis of Variance

			DF	Sum of Squares	Mean Square
Multiple R	.58766	Regression	2	43153.24638	21576.62319
R Square	.34535	Residual	307	81802.49556	266.45764
Adjusted R Square	.34108				
Standard Error	16.32353	F =	80.97581	Signif F = .0000	

Variable	B	SE B	Beta	T	Sig T
% credits completed first semester	.3526	.0279	.5868	12.631	.0000
# credits attempted first semester	.8719	.2968	.1365	2.938	.0036
(Constant)	-9.2091	4.7360		-1.944	.0528

Equation Number 2: Dependent Variable, % of Credits Completed

Analysis of Variance

			DF	Sum of Squares	Mean Square
Multiple R	.84890	Regression	3	22.48522	7.49507
R Square	.72063	Residual	306	8.71680	.02849
Adjusted R Square	.71789				
Standard Error	.16878	F =	263.11176	Signif F = .0000	

Variable	B	SE B	Beta	T	Sig T
% credits completed first semester	.0068	4.4203	.7188	15.440	.0000
First semester GPA	4.2301	1.3360	.1483	3.166	.0017
Arithmetic test score	.0046	.0017	.0844	2.767	.0060
(Constant)	-.0547	.0479		-1.142	.2544

Equation Number 3: Dependent Variable, Average GPA

Analysis of Variance

			DF	Sum of Squares	Mean Square
Multiple R	.73763	Regression	4	1926262.35026	481565.58756
R Square	.54410	Residual	305	1613996.43996	5291.79161
Adjusted R Square	.53812				
Standard Error	72.74470	F =	91.00237	Signif F = .0000	

Variable	B	SE B	Beta	T	Sig T
% credits completed first semester	2.0148	.1276	.6299	15.791	.0000
Reading test score	2.1884	.5404	.1627	4.049	.0001
Age	2.0240	.7607	.1106	2.661	.0082
High school GPA	-28.7188	12.5990	-.0944	-2.279	.0233
(Constant)	54.7949	55.4358		.988	.3237

Because academic performance in the first semester proved such a strong correlate of overall success, analysis that would explain these factors was undertaken using student background data and program variables. Results of this analysis is displayed in tabular form. Even for students' initial experiences at the college, individual characteristics have limited power to predict academic outcomes; program factors have even more limited predictive value.

Table 7

Equation Number 1: Dependent Variable, First semester GPA

Multiple R	.52111
R Square	.27155
Adjusted R Square	.26055
Standard Error	108.27335

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	5	1446527.00410	305.40082
Residual	331	3880351.86830	11723.11743

F = 24.67820 Signif F = .0000

Variable	B	SE B	Beta	T	Sig T
Attempted credits, first semester	9.1301	1.2948	.3376	7.051	.0000
Age	5.7547	1.1276	.2619	5.103	.0000
Reading test score	2.4939	.7968	.1596	3.130	.0019
High school GPA	-47.9975	18.4735	-.1311	-2.598	.0098
Algebra test score	1.4255	.6640	.1081	2.147	.0325
(Constant)	71.6110	83.7874		.855	.3933

Equation Number 2: Dependent Variable, % Credits completed, first semester

Multiple R	.28959
R Square	.08387
Adjusted R Square	.07488
Standard Error	32.18883

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	3	29023.82045	9674.60682
Residual	306	317053.03395	1036.12103

F = 9.33733 Signif F = .0000

Variable	B	SE B	Beta	T	Sig T
Age	1.0346	.3148	.1807	3.287	.0011
Algebra test score	.5899	.1914	.1691	3.083	.0022
Program enrollment	-.0201	.0072	-.1529	-2.785	.0057
(Constant)	54.1711	7.8871		6.868	.0000

Discussion

Consistent with the existing body of retention research, student persistence at Massasoit proved to be a complex and institutionally specific phenomenon, influenced by both student and institutional factors. While the background characteristics of incoming students and the characteristics of the programs in which they enroll were both shown to be related to retention, students' academic experiences during their first semesters at college appear to be the best predictors of subsequent persistence and academic achievement.

At Massasoit, older and female students are more likely to graduate, complete significantly more course credits, and earn higher grade point averages than their younger male counterparts. Minority students' persistence measured over all programs was not significantly different from that of white students; but when selective health career programs were eliminated from the sample, significant differences emerged, with minority students exhibiting lower persistence and graduation rates. When significant variables were examined separately for the two groups, it appeared that the dynamics of factors influencing persistence were different for minority students. Age and gender did not have significant relationships to persistence for minorities, and placement test scores, presumed to be a measure of academic skills, were negatively related to both persistence and performance. Moreover, both program variables and first semester academic performance appear to be somewhat stronger influences for minority students. These trends merit further analysis with a sample including larger numbers of minorities.

Program characteristics alone, with the exception of health care related programs, proved to have only modest impact on student persistence. The stronger performance of students in health career programs may be largely attributable to program selectivity. However, it should be noted that these programs also have all of the other characteristics that appear to be associated with high retention programs: they are small in size, rigorous in content, and have a structured and cohesive curriculum. All of the program variables analyzed here warrant further investigation, with some refinement of operational measures and data accuracy.

The importance of students' initial college experiences to their ultimate success is the clearest finding from this research. While student characteristics, along with the characteristics of institutional programs, have significant relationships with persistence and academic performance, student experiences once enrolled appear to have a greater role in predicting educational outcomes. The first semester in college is clearly a critical period for academic success; students who do not do well in their first semester are much less likely to graduate, and complete fewer total course credits. Efforts to assist students during their first semester, which at Massasoit include a freshman seminar and an early academic intervention system to identify at-risk students, are worth continued support and enhancement. Colleges that wish to increase student retention will benefit from examining both student and institutional variables, and by formulating initiatives to improve persistence by changing programs in ways that enhance students' initial academic experiences.

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Quilting of Fragmented Data: Multi-Dimensional Approach to Conducting an Ad-Hoc Residential Facility Study

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Introduction

In the world of institutional research, many researchers are constantly asked (and required) to conduct studies that would require carefully controlled longitudinal approaches in a few weeks of time. How do we deal with this dilemma? How do we ensure the quality of the results?

The author was faced with this classic dilemma a few months ago when she was approached with a request, "We need to do a facility study for the Trustee's meeting next month." Before going further with this request, the author had to deal with more immediate questions - "how am I going to pull this off in just a few weeks?" and "whatever I managed to put together, will it have the internal validity?" Joe Saupe (1990) wrote "institutional research is research conducted with an institution of higher education to provide information which supports institutional planning, policy formation and decision making." As clearly suggested in this passage, results of our work, not always, but sometimes manifest itself into policies, programs, and institutional mission changes. Therefore, addressing validity issues is an essential part of our profession. James Nichols et al. (1989) devoted an entire book advocating systematic approaches and planning in institutional research. The systematic approach will allow researchers greater control, which will promote the quality of study. However, most institutional researchers I know do not operate under this "ideal" condition.

Again, the question is "how do we conduct studies which would require carefully controlled longitudinal approaches in a few weeks of time, and still ensure the validity of the results so it could be used by the decision makers?" I am not the only person faced with this dilemma. Many years ago, Saupe (1990) addressed this issue for the institutional researchers. He wrote "institutional research, like other types of research, should be objective, systematic and thorough. The outcomes of the research should be as free as possible from the influence of personal philosophy, political considerations or desired results."

This presentation will focus on how one institutional researcher dealt with the classic dilemma between time/resource constraints and integrity of research while conducting a study on the quality of on-campus residential facilities. How does this College measure up compared to the peer/competitor institutions? Furthermore, does the quality of residential facilities have any implication in recruitment and retention of students?

Methodology

A multi-dimensional approach to this inquiry was recommended and approved by the Facility Study Committee. The researcher and the members of the Committee felt that multi-dimensional approach would overcome the short comings of fragmented data available to the IR office and it would increase the validity of the findings. The following research methodologies were selected: focus group, campus visit, and student opinion surveys.

Focus Group

Focus group research method was selected to collect in-depth, qualitative data from a small group of randomly selected students. Forty-three freshmen and sixty-five upperclassmen who were enrolled during the Spring '92 and lived in on-campus housings were randomly selected for the focus group study. This represented approximately thirty percent of the student body who met the selection criteria. Six freshmen and nine upperclassmen participated in three focus group sessions - one freshman session and two upperclassmen sessions.

These group sessions were conducted in a small conventional meeting room. Each session had one facilitator and one participant observer to ensure the objectivity of the results. The sessions were audio taped for later analysis. The facilitator and two participant observers utilized for this study had to agree on every issue before it was added to the final report.

Fourteen questions were developed to solicit the students' opinions and suggestions about the College's on-campus housing, as well as, their opinions and knowledge about the residential facilities of the College's peers and competitors.

Campus Visit

Comparison data were collected through on-site visits by a three member visiting team. Initially, the Committee selected five institutions; however, only three of the selected colleges were visited by the team due to the time constraints.

After each visit, the visiting team members were asked to keep a detailed journal and it was later used in the team's final report. In order to test objectivity of the visiting team's findings their journals and final report were analyzed against the data collected from the focus group and the Campus Environment Survey.

This process not only provided a validity testing for the team's findings, but it also added another dimension to the validity testing of the focus group results.

Student Opinion Survey - Campus Environment Survey

To validate and generalize the results from the focus group study, which relied on very small number of students, the College's Campus Environment Survey - Student Life (CES-SL) was identified as the secondary data source. The CES-SL is a campus-wide, mail survey designed to collect students' opinions and their assessments on the issues relating to the student life at Goucher. The survey contained five items directly addressing the residential facility issues and seven items relating to the "atmosphere" of their residential halls.

During the data analysis, directional consistencies between the focus group results and the CES-SL data were emphasized. In addition, dorm specific comments collected during the focus group were tested against the survey data.

Student Opinion Survey - Admitted Student Questionnaire

From the student recruitment perspective, the Committee also wanted to know if non-enrolled, admitted students hold qualitatively different opinions on the College's residential facility. Perhaps, this contributed to their decisions to enroll elsewhere. The College has been using the Admitted Student Questionnaire developed by the College Board for the last four years, and this year the College decided to include a section on residential facilities. The 1992 group is currently being surveyed and the data should be available by late fall.

Results and Early Implications

The data collected for this study clearly suggested that the College's residential facilities are neither exceptionally good nor exceptionally bad. The College's older buildings and large singles are very much loved by the students. Nevertheless, the focus group participants and the Campus Environment Survey respondents made many suggestions which could greatly improve the quality of their on-campus living. The majority of the survey respondents stated that their rooms are "physically comfortable" and "conducive to studying, sleeping, and socializing." The satisfaction ratings ranged from 61 percent to 77 percent.

The data suggest that the quality of residential facilities differ greatly between the dorms (i.e., Fisher vs. Stimson). These differences range from the level of cleanliness to the amount of furniture and amenities available in the Commons, lounges, and kitchen.

The data also point out that alternative living arrangements such as suits, apartments, and town houses would be very desirable for juniors and seniors. Interestingly, this is only issue in which the freshmen and the upper classmen showed significant differences. All of the upper classmen focus group participants thought that suites, apartments, and/or town houses are very "nice" living arrangements. Because these type of arrangements are much more like "living at home," at the same time, it will provide greater privacy, independence and limit the number of individuals sharing a bathroom. Conversely, the freshmen focus group participants disliked the alternative living arrangements. They strongly felt that it would limit their ability to make friends and develop social ties with other students.

According to the focus group participants the condition of residential facility was a factor in their college selection process. However, it did not play a critical role in their final enrollment decision. It must be pointed out that this is not a conclusive finding at this time. Data from the Admitted Student Questionnaire should provide the additional piece needed for more conclusive results on this issue.

During the Fall 1992 semester the following events took place in direct response to the results of the residential facility study:

1. The College installed all new washers and dryers which are designed for commercial usage.

2. New carpet in the dining hall and new furniture in student lounges and Commons.

3. Residential Life developed a program to educate the students to respect and value College's properties, and hired two Residential Interns to carry out the program.

4. Physical Plant developed a five-year maintenance plans for the residential facilities to push them toward proactive management of the facilities.

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Tracking Student Transfers: The Perils and Pitfalls of Complying with the New Student Right-To-Know Act (PL 101-542)

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On July 1, 1992 the new **Student Right-To-Know and Campus Security Act** (PL 101-542) went into effect. Among other things the law requires any institution that receives federal student aid funds to compile and report graduation rates for each of the curriculum offered by the institution beginning July 1, 1993.

For community colleges throughout the country this legislation offers both an opportunity and challenge. It offers an opportunity because improvements in reporting procedures over previous federal regulations enable community colleges to provide a more accurate picture of the successes they are having in meeting the educational goals of their students. The law now justly allows students who transfer before graduating in a related curriculum to be included in the graduation rate.[1]

The new law offers a challenge to community colleges, however, in that identifying and tracking student transfers involves a number of serious hurdles which must be overcome.

Purpose of Paper

It is the purpose of this paper to discuss the process used at Westchester Community College to identify students who transferred to four-year colleges before graduating, and to provide a transfer student profile and back-up data suitable to satisfy auditors verifying requirements for the Student Right-to-Know and Campus Security Act.

While such topics as the persistence of transfers at four-year colleges, and the eventual graduation rate are usually of greater interest to college administrators and faculty, the scope of this paper has been specifically narrowed to describing and advocating a uniform, nationwide process for tracking the four-year colleges to which community college students transfer.

The haphazard and inconsistent methods currently used throughout the country have gone on long enough (almost thirty years). The benefits of a nationwide agreement on this matter now far outweigh the shortcomings that will inevitably occur in having to make some compromises for the sake of uniformity.

Problems of Definition: Who Is a Transfer?

Even before considering the mechanical process of tracking transfer students, the first problem is to define who qualifies as a transfer student.[2]

Important considerations include (1) the number of credits an individual must take at the community college to be considered a bona fide student, (2) the identification method of when the student attended the community college, (3) the treatment of students who enroll at a community college and a senior college at the same time, and (4) the number of years that should be allowed to elapse between attending a community college and transferring to a four-year college.

Fortunately, recent publications concerning transfer students seem to converge on a definition of a transfer student that address these considerations. Most agree to using twelve credit hours as the minimum number for enrollment purposes at a community college. Most chose the academic year entered as the benchmark for when the student attended. Most also use four-years as the maximum amount of time that should be allowed to elapse between attending a community college and transferring to a four-year college. Students who attend a four-year college and a community college simultaneously have not followed the sequential steps (the community college first and the four-year college second) to be considered "transfers."[3]

For purposes of this paper, therefore, the following definition employed by James Palmer, Associate Director of the Center for Community College Education at George Mason University in Virginia, and Arthur Cohen of the Center for the Study of Community Colleges at UCLA is used and recommended:

> A transfer student is one who enters in a given year, stays long enough at the community college to complete 12 units and goes on to a four-year institution within four-years.[4]

The transfer rate for the entire community college is calculated by dividing the number who entered in a given academic year, obtained at least 12 credits, and subsequently transferred to a four-year college, by those who completed at least twelve units at the community college in the same academic year. In the case of an individual curriculum, the rate is calculated by dividing the number in a curriculum in a given year who took at least twelve credits at the college and subsequently transferred to a four-year college by the total number enrolled in that curriculum in the same academic year who have taken at least twelve credits at the college.

Identifying Transfer Activity

A survey conducted by the National Center for Academic Achievement and Transfer in cooperation with AACJC in April, 1990, shows the degree to which a variety of approaches for identifying transfers is being used throughout the country.[4] The most frequently employed approaches identified by the 528 institutions replying to the survey were:

Follow-up survey of graduates	(21% of institutions)
State reporting system	(10% of institutions)
Number of transcript requests	(9% of institutions)
Estimate or guess	(11% of institutions)

For purposes of complying with the Right-to-Know legislation, none of the above approaches is very satisfactory. Graduate follow-up surveys are not needed, since the actual graduate count is suffice for the new law.

State transfer reporting systems, at least in New York, offer great promise, but have one significant shortcoming. The reports track transfers only within the system. The numerous private colleges in the State are not included.

The number of transcript requests is meaningless without a follow-up on whether the student actually enrolled. Lastly, the "estimate or guess" approach has real possibilities, although the auditors might not look so favorably on it.

The Method Proposed

Any method used to track student transfers is fraught with reporting problems. The one that appears to offer the most reliability and a mechanism for review by the auditors, however, is what for want of a better name shall be called the **"Request/Confirmed Process."**

Step One: The first step in the process involves taking all the requests made for a transcript to be sent in a given semester and removing from the files those requests that were not sent to a bona fide four-year college.[5]

In the case of Westchester Community College, the Fall 1990 semester was chosen. Careful notation was made of the semester the student first attended W.C.C. for future classification into "academic year first attended" categories. After eliminating all institutions and companies except four-year colleges, 1,350 transcripts were found to have been sent that semester. For purposes of determining a "bona fide" four-year college, a database called "Info Pac/Colleges and Universities" produced by General Info was used.[6]

Step Two: The next step involved drawing up a transcript/confirmation form and sending it to the colleges where the students had asked transcripts to be sent. If the student asked for transcripts to be sent to several colleges (and most did) the confirmation form was sent to each. The size of the project was considerably lessened by the simplicity of the form. A brief introductory sentence stated only that our records showed W.C.C. had sent a transcript for the student listed below. Would they be kind enough to confirm if the student did at a subsequent date enroll.

Of special assistance to the four-year colleges was the inclusion of the social security number of the student and the date the transcript was sent. We attribute the remarkably high response rate from the registrars of the four-year colleges to the inclusion of these two pieces of information.

Out of 1,350 inquiries, 1,186 responses were received, a response rate of 87.8%. Not only was the response rate very high, but it was almost immediate. Confirmation forms as they were written were sent out one week and responses literally come pouring in the following week.

While this process was not computerized this first go around, plans are underway to automate mailings within the college's current registration system. A computerized file will be kept recording each transcript sent. The name, social security number, date the transcript was sent and the college and address to which it was sent will also be kept on the file.

At the end of each semester, mailings to each college where a transcript was sent will be automatically generated containing all the necessary data on students for identification purposes and a request to verify enrollment.

Responses will be entered into the same data file in a field marked either Y (yes) or N (no). This will enable not only a computation of the number who transferred with their academic and demographic characteristics, but also a record of responses to date.

Step Three: A deadline was set for receiving responses and once that occurred the responses were divided into "yes" (they did transfer) and "no" (they did not transfer) responses.

For Westchester Community College 518 forms were returned with a "yes" response and 540 with a "no" response. Therefore, out of the 1350 transcript/confirmation forms sent, 38% resulted in a positive confirmation that a student had transferred. Another 40% confirmed the student had not transferred. The remaining 22% (292) either were not returned at all (164), were not marked (20), were accepted by the college but the student had not enrolled (26), or lacked sufficient information to be included (82).

Step Four: The data were fed into the computer (using Paradox and Lotus 1 2 3) and the following two reports were generated from it: (1) "A Profile of the Colleges To Which Students Transferred," and (2) "A Profile of The Students Who Transferred."[7]

A Profile of the Colleges to Which Students Transferred

The first report was a breakdown of all the colleges to which W.C.C. students transferred who had requested transcripts to be sent in Fall 1990 indicating (1) the number that transferred to each college, (2) the state the college was located, and (3) the number of colleges in each state. The following is a summary of the results:

1. Of the 1,350 W.C.C. students who requested a transcript to be sent to a four-year college in Fall 1990, 38.0% (518) enrolled in a four-year college the following spring or summer semester.
2. These 518 W.C.C. enrolled in four-year colleges located in 28 states throughout the United States.
3. They enrolled in a total of 148 four-year colleges nationwide.
4. Fifty-nine of these colleges were located in New York state. More than three-fourths of the transfers (76.6%) or 397 enrolled in New York state four-year colleges.
5. Almost one-fifth (17.9%) or 93 enrolled in 15 SUNY colleges. Another 18 enrolled in 5 CUNY colleges.
6. Almost two-fifths of the W.C.C. transfers (37.5%) or 194 students to eight of the nine four-year colleges in Westchester County.
7. Pace University (White Plains and Briarcliff campuses) received the greatest number of students (85) of the eight colleges located in Westchester, one-sixth (16.4%) of the transfers.
8. The other Westchester colleges located in Westchester county to receive transfers in order of descending enrollment were Iona (59), SUNY Purchase (19), Mercy (16), College of New Rochelle (12), Marymount (5), Sarah Lawrence (2) and Manhattanville (1).

A Profile of the Students Who Transferred

The W.C.C. Student Transfers Profile focuses on the academic and demographic characteristics of W.C.C. students who transferred to four-year colleges in either the spring or summer semesters of 1991.[8] All of the statistics are nicely printed on one sheet (see Appendix C) and are summarized as follows:

1. The largest number of students who transferred were not enrolled in a curriculum at all, but, instead, had not matriculated. Over one-fourth (28.8%) or 149 were not enrolled.
2. The second highest number of students to transfer (48) were enrolled in the Liberal Arts Social Science curriculum. This comprised almost one-tenth (9.3%) of the transfers.
3. Other curricula that showed significant numbers of students transferring in descending order of size were Liberal Arts Humanities (34), Business Accounting AS degree (32), Business Administration AS degree (29), Business Administration ASS degree (26), Liberal Arts Math

Science (22), and Business Marketing (20). None of the other curriculum had more than 15 transfers.

4. The average number of credit hours obtained by these transfers was 37.2 hours. Two-fifths (40.84%) had obtained over 50 credit hours.

5. The average grade point average (GPA) of this group of transfers was 2.90. Half (50.2%) or 224 students had a GPA of 3.00 or better. Of these 5.6% or 28 students had a 4.00 and 44.6% had a 3.00 or better GPA. Another 42.2% have a grade point average between 2.00 and 2.99 and 7.6% or 38 were under a 2.00.

6. Almost half (47.2%) or 237 were males. Of this group almost three-fourths were white (74.3%), 7.2% Black, 5.1% Hispanics, and 3.4% Oriental.

7. Of the women who transferred (52.8%) almost four-fifths (79.3%) were white. Another 7.2% were Black, 4.2% Hispanic, and only 1 was Oriental.

8. Over half of the students who transferred (53.0%) were in the 22 to 29 age bracket. Another fourth of the students (24.1%) were 20 or 21. Only 5 students were 19 or under. Over one-fifth were 30 or over (21.9%).

Conclusion

The passage of the Student Right-To-Know and Campus Security Act (PL 101-542) scheduled to take effect on July 1, 1992, gives community colleges a strong additional incentive to track students who transfer from their colleges to four-year colleges. The new law now allows students who transfer into a similar curriculum before graduating to be counted in the graduation rates community colleges must report for each curriculum starting July 1, 1993.

Nationwide, there is no agreed definition of what constitutes a transfer student and the method to be used for accomplishing the tracking of students to four-year colleges. There is an immediate need, therefore, to establish a uniform definition of a transfer student and a workable process for tracking and verifying to auditors the students that have transferred.

Fortunately, a convergence of opinion has occurred over the last thirty years toward a definition of a transfer students which is discussed and recommended in this paper.

The process for tracking Fall 1990 students who transferred to four-year colleges from Westchester Community College also has been described in this paper and is offered as basis for discussion in an effort to establish a uniform methodology. It has the advantages of being feasible both manually and in computer automated form, includes all four-year colleges throughout the country both public and private, and provides each community college with the ability to create a profile of the academic and demographic characteristics of the students who transfer, and a report on the colleges to which they transfer.

Failure of community colleges to incorporate transfer students into the federally mandated Right-To-Know graduation rates, will produce results which greatly understate the contributions community colleges are making to the goals and objectives of their students, and greatly understate the contribution that community colleges are making to the overall well-being of the American educational system.

Appendix C

CURRICULUM & BIOGRAPHIC SUMMARIES OF WCC TRANSFER STUDENTS

Westchester Community College

Curr Code	Curriculum Title	Total Enrolled
0515	APPLIED ART	1
0250	BUSINESS ACCOUNTING (AS)	32
0310	BUSINESS ACCOUNTING (AAS)	2
0275	BUSINESS ADMINISTRATION (AS)	29
0311	BUSINESS ADMINISTRATION (AAS)	26
0301	BUSINESS LEGAL SECRETARY	1
0320	BUSINESS MARKETING	20
0325	BUSINESS RETAIL BUSINESS MGT	1
0300	BUSINESS SECRETARIAL	2
0285	CHEMICAL TECHNOLOGY	1
0380	CIVIL TECHNOLOGY	9
0150	COMMUNICATIONS AND MEDIA ARTS	15
0221	COMPUTER SCIENCE	4
0340	CRIMINAL JUSTICE POLICE	10
0312	DATA PROCESSING-PROGRAMMING	4
0385	ELECTRICAL TECHNOLOGY	5
0522	ELECTRONICS	1
0220	ENGINEERING SCIENCE	14
0335	FINE ARTS	6
0230	FOOD SERVICE ADMIN FOODS & NUTR	1
0334	FOOD SERVICE DIETETIC TECH.	2
0330	FOOD SERVICE HOTEL & RESTAU.	1
0332	FOOD SERVICE-INSTITUTIONAL	1
0350	HUMAN SERVICE	8
0125	INDIVIDUAL STUDIES (AA)	3
0225	INDIVIDUAL STUDIES (AS)	4
0337	INTERPRETER FOR THE DEAF	1
0206	LIB ARTS ENVIRONMENTAL SCIENCE	1
0200	LIB ARTS MATH SCIENCE	22
0207	LIB ARTS MATH SCIENCE E.S.	1
0210	LIB ARTS MATH SCIENCE MED TEC	4
0202	LIB ARTS MATH SCIENCE PHARM.	4
0100	LIBERAL ARTS HUMANITIES	34
0110	LIBERAL ARTS SOCIAL SCIENCE	48
0550	MECHANICAL ENGINEERING DRAFT.	4
0390	MECHANICAL TECHNOLOGY	2
0360	MEDICAL LABORATORY TECHNOLOGY	4
0999	NO CURRICULUM	149
0290	NURSING RN	7
0291	NURSING RN-HOLD	1
0304	OFFICE TECH-NON-SHORTHAND	1
0305	OFFICE TECHNOLOGIES-LEGAL	1
0303	OFFICE TECHNOLOGIES-SHORTHAND	1
0364	PERFORMING ARTS DANCE	1
0362	PERFORMING ARTS DRAMA	1
0363	PERFORMING ARTS MUSIC	2
0536	PRIVATE SECURITY	1
0370	RADIOLOGIC TECHNOLOGY	1
0512	REAL ESTATE	1
0400	RECREATION LEADERSHIP	1
0365	RESPIRATORY CARE	3
0575	TOOL AND DIE	1
0507	WORD PROCESSING	2

Ethnicity:		
White	386	76.89%
Black	36	7.17%
Oriental	9	1.79%
Hispanic	23	4.58%
Amer. Ind.	1	0.20%
Foriegn	4	0.80%
Unknown	43	8.57%
Total	502	

Age:		
under 18	1	0.20%
18 - 19	4	0.80%
20 - 21	121	24.10%
22 - 29	266	52.99%
30 - 39	69	13.75%
40 - 49	25	4.98%
over 50	16	3.19%
Total	502	

Males:		
White	176	74.26%
Black	17	7.17%
Oriental	8	3.38%
Hispanic	12	5.06%
Amer. Ind.	1	0.42%
Foriegn	3	1.27%
Unknown	20	8.44%
Total	237	

Females:		
White	210	79.25%
Black	19	7.17%
Oriental	1	0.38%
Hispanic	11	4.15%
Amer. Ind	0	0.00%
Foriegn	1	0.38%
Unknown	23	8.68%
Total	265	

GPA:		
under 1	4	0.80%
1 to 1.99	34	6.77%
2 to 2.99	212	42.23%
3 to 3.99	224	44.62%
4	28	5.58%
Total	502	

Credit Hours:		
under 15	168	33.47%
15 to 29	66	13.15%
30 to 39	38	7.57%
40 to 49	25	4.98%
over 50	205	40.84%
Total	502	

Average number of credit hours obtained: 37.2
Average grade point average obtained : 2.9

Source: Marcia M. Lee, Ph.D.
Robert Sciabbarrasi
Office of Institutional Research
Westchester Community College

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Footnotes

[1] The new law also allows students who graduate "within 150 percent of the normal time for completion of graduation" to be included in the graduation rate, a provision particularly important to community colleges where students tend to alternate full-time and part-time enrollment more than at four-year colleges. Moreover, the reporting now applies only to beginning full-time students bringing the task of tracking students into the realm of possibility.

[2] The federal legislation does not include a definition, although later regulations probably will.

[3] See Arthur Cohen, "Calculating a Transfer Rate," American Association of Community and Junior Colleges, One Dupont Circle NW., Washington, DC 20036; and Norton W. Grubb, "The Decline of the Community College Transfer Rates: Evidence from National Longitudinal Surveys, Department of Education, 1990, (ERIC Document Reproduction Service No. ED 315 125).

[4] "Transfers," The National Center for Academic Achievement and Transfer, Working Papers: Volume 1, Number 3, October 1990, p. 4.

[5] In 1990 SUNY issued its first report using the "Transfer Feedback Information System." The report furnishes information concerning students who transfer from SUNY community colleges to four-year colleges in the State University system. When the system is fully on-line it promises to be very useful, not only for identifying transfers, but for studying their persistence at four-year colleges. A shortcoming of the system, of course, is the fact that four-year colleges not in the SUNY system are not included.

[6] The Info Pac/Colleges and Universities database was purchased in conjunction with the "Hotline" data retrieval system. The database contains the names, addresses and telephone numbers of all the accredited four-year colleges in the United States. A SIC number for purposes of identification is supplied for each college.

[7] When a system is on-line that automatically generates a form upon sending a transcript, the student data already will be in the file except for an indicator of whether the student enrolled, and the curriculum in which he or she enrolled.

[8] Because demographic data on some students was missing on the W.C.C. Student Database, only 502 students are included in this report compared to 518 for the Colleges Transferred-To Profile.

Developing A Comprehensive Data Base For Assessing Faculty Productivity

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There is a pervasive sentiment within the general public in the United States that American higher education is not delivering quality instruction in a cost-effective manner. Indeed, William Massy and Robert Zemsky (1992), in their recent paper "Faculty discretionary time: departments and the academic ratchet," described American higher education in the following terms:

> In less than three years, colleges and universities have moved from the ambivalent affluence of the 1980s into an era of resource constraints and nettlesome public scrutiny. Public funding for higher education has declined in absolute terms and, more important for the long-term future of colleges and universities, as a share of public appropriations. Public as well as private institutions have found themselves in the uncomfortable position of having to decrease expenditures per student while simultaneously increasing tuition at a rate that exceeds the cost of living. These actions have made clear what may have long suspected: that students are being asked to pay more for less. (p. 1)

What are the underlying causes of this public mistrust of higher education, and what can be done to address it? Alfred and Weissman (1987) argue that American colleges and universities, particularly in the public sector, are multipurpose enterprises with activities focusing on undergraduate teaching, but frequently supplemented with graduate teaching, research, and public service. And while most colleges and universities have platitudinous mission statements that embrace these diverse institutional functions, the priority order and the rewards system that underpins that priority is not always clear. The result is that faculties frequently shape their activity to meet their personal professional needs as opposed to institutional needs and priorities.

Zemsky and Massy (1990) distilled this faculty independence into an organizational construct referred to as the "academic ratchet." The essence of this construct is as follows:

> Academic Rachet: A term to describe the steady, irreversible shift of faculty allegiance away from the goals of a given institution, toward those of an academic specialty. The rachet denotes the advance of an independent, entrepreneurial spirit among faculty nationwide, leading to increased emphasis on research and publication, and on teaching one's specialty in favor of general introduction courses, often at the expense of coherence in an academic curriculum. Institutions seeking to enhance their own prestige may contribute to the rachet by reducing faculty teaching and advising responsibilities across the board, thus enabling faculty to pursue their individual research and publication with fewer distractions. The academic rachet raises an institution's costs, and it results in undergraduates paying more to attend institutions in which they receive less attention than in previous decades. (Zemsky and Massy, 1990, p. 22)

Henry Rosovsky , Dean of the Faculty of Arts and Sciences at Harvard University, characterized American faculties, when viewed as social organisms, as operating "without a written constitution and with very little common law. That is a poor combination, especially when there is no strong consensus concerning duties and standards of behavior. This situation has been made infinitely worse by the lack of information in the hands of deans concerning [the workload of] individual professors." (Rosovsky, 1992, p. 2B) Rosovsky goes on to say that he does not blame faculty for current behavior patterns, and that they are indeed quite rational and understandable given the absence of constraints. "A wise senior colleague with whom I recently discussed our predicament strongly argued that the administration should assume most of the blame precisely because of our manifest unwillingness to set clear tasks and clear limits. The university setting and competition with other institutions make these assignments unusually difficult, but I am quite willing to agree that deans... have not displayed the required degree of leadership." (Rosovsky, 1992, p. 2B)

How do colleges and universities introduce measures of accountability and productivity with respect to allocation and use of faculty resources? What tools are needed to facilitate the leadership that Rosovsky laments as lacking? Dean Rosovsky, himself, points us in the right direction: "From the point of view of a dean, two observations are in order. First, the dean has only the vaguest notion concerning what individual professors teach. Second, the changes that have occurred [in faculty workloads, over time] were never authorized at the decanal level. At least that is what I believe, and that is my main point. No chairman or group of science professors ever came to the dean to request a standard load of one-half course per year. No one ever requested a ruling concerning, for example [workload] credit for shared courses. Change occurred through the use of fait accompli, i.e., creating facts ..." (Rosovsky, 1992, p. 1B)

The relationship between academic productivity and instructional costs is well documented. (Brinkman 1990a; Hoenack, 1990; Brinkman 1990b; Massy, 1989, Middaugh and Hollowell, 1991; Middaugh and Hollowell, 1992) Distilled to its most simplistic form, the more faculty teach, the less instruction costs. But if faculty are to pursue other legitimate academic interests, i.e., research and service that are directly related to the institutional mission, how can a balance be struck between teaching and other ancillary activities that takes cognizance of the issue of cost efficiency? How can this information be assembled into a reporting structure that has immediate utility to deans, department chairs, and others interested in knowing what faculty do, and whether faculty resources are being deployed in the most efficient and effective manner? That is precisely the issue that the University of Delaware's Office of Institutional Research and Planning has been wrestling with for the past three years.

Let us begin with instructional activity and address Rosovsky's concern that deans and other senior administrators know neither what individual faculty teach nor how those faculty are credited for their teaching activity. The Office of Institutional Research has developed a Faculty Workload Summary which, for any given semester, looks at instructional activity by college, by department, by individual faculty member arrayed by academic rank.

Instructional activity can be viewed in two ways: by "origin of course" and by "origin of instructor". The University's History Department can serve as the vehicle for examining both analyses. Appendix A contains sample pages from the "origin of course" data array. Origin of course looks at all of the workload generated in courses with the HIST course prefix, regardless of whether the instructor is a member of the History Department, or is budgeted to another department. The report lists the course number, the number of sections of that course, and the total student enrollment, teaching credits, and student credit hours associated with the course. It is clear that five of the six individuals in Appendix A have History as their home department, i.e., their salaries are budgeted to that unit. The sixth individual, while teaching History courses, is budgeted to the College of Urban Affairs and Public Policy.

The report provides additional useful information. In addition to academic rank, the report indicates the instructor's tenure status, whether or not the individual received overload pay, and if there was a second instructor of record. If a second instructor of record exists, workload credit is apportioned according to the percent of the teaching burden assumed by each respective faculty member (displayed as % Load). The report also indicates whether or not the course is dual listed (400-level running concurrently with 600 level) or cross listed (the same course being taught with a History call number as well as that from another department). This avoids crediting the faculty member with more course sections than he/she actually teaches. The second page in Appendix A rolls up the activity of individual faculty into a department summary that looks at basic workload measures - students enrolled, teaching credits, and student credits - by course type (regularly scheduled versus supervised study) and by level of course (lower division, upper division, graduate).

The origin of instructor array in Appendix B takes a slightly different view of instructional activity. this view examines the workload of faculty budgeted to the History Department, regardless of whether or not the course taught was a History course. For example, looking at Appendix B, Faculty member "B" is receiving credit for three History courses and one Early American Studies course; Faculty member "E" is receiving credit for three History courses and three Master of Arts in Liberal Studies courses. The report formatting is the same as origin of instructor; the aggregation of courses is the difference. Origin of instructor analysis is a source of relief to nervous department chairs who, in times of scarce resources, fear that their faculty will not receive credit for all the teaching they do. This approach to instructional analysis provides support for interdisciplinary instruction and cooperative teaching activity.

The current Faculty Workload Summary, detailed above, reports teaching activity for a single semester at a time. The Office of Institutional Research and Planning is about to put into production an additional report which we are calling the Faculty Activity Analysis, which takes a larger view of faculty activity. A prototype of the report appears in Appendix C. The report will describe, on a single page, faculty teaching activity in the Fall, Winter, Spring and Summer Sessions of each of three consecutive years. The report will also display, academic rank, tenure status, current salary, current external funding, and leave history. The focus here is an expanded view of what faculty do in the winter and summer semesters, as well as providing a sense of external funds generation and sabbatical leave history. It is anticipated that during the next year, this report will be expanded to show advising activity and institutional committee work.

If the data in Appendices A through C are to have any real policy value in ensuring the most efficient and economical use of faculty resources, then they must somehow be linked to the budget planning process. To that end, the Office of Institutional Research and Planning has developed a bank of budget support data. These data are intended to portray college or departmental productivity in the aggregate.

The data are arrayed into what are referred to as Budget Support Summaries. They are Lotus spreadsheets, four pages in length, which provide information on the Fall and Spring Semesters (i.e., those supported by the basic budget), as well as annual averages for the three most recent fiscal years. Thus, some measure of trend data is established. Where there are weak productivity indicators over time, or where there are abrupt and precipitous drops in productivity, it is then possible to go back to the individual faculty data in Appendices A through C, as well as detailed supplemental fiscal data which will be described shortly, to examine the underlying causes of productivity problems.

What data elements are found in the Budget Support Summaries, and how are they used in resource allocation and reallocation decisions? A definition of terms and a discussion of how the data are viewed by decision-makers is the appropriate starting point.

1. FTE Majors: How many student majors does a college or department have? What sort of demand is there within the unit for instructional activity? Full time equivalent (FTE) majors, by student level, are calculated by taking the total number of part time students and dividing that number by 3, and subsequently adding the quotient to the number of full time students. Long term or dramatic shifts in FTE majors may well have implications for future resource allocation decisions.

2. Degrees Granted: To what extent do student majors complete the academic program? The total number of baccalaureates, and where appropriate, master's degrees and doctorates awarded annually are displayed.

3. Student Credit Hours: Student credit hours are tallied for lower division, upper division, and graduate levels of instruction for regularly scheduled and supervised study courses, combined.

4. Percent Student Credit Hours Taught by Faculty on Appointment and Percent Taught by Supplemental Faculty: Who is doing the teaching in a given college or department? If the proportion of teaching done by supplemental faculty is high, why? Is it because regular faculty on appointment, despite heavy teaching loads, cannot satisfy the demand for instruction? Or are regular faculty engaged in activity other than teaching? If the latter, with what return on investment to the college or department?

5. Percent Student Credit Hours Consumed by College/Departmental Majors and Percent Consumed by Non-Majors: If the number of majors is a measure of demand for instruction from within a college or department, the percent of student credit hours consumed by non-majors is a measure of the external or service demand upon the department. This can be extremely important to a department such as the University of Delaware's Philosophy Department. With fewer than 30 FTE undergraduate majors in a highly specialized discipline, the department, at first blush, might seem a candidate for resource reduction. Yet the data show that close to 20,000 student credit hours per year are generated by the department, and only 2 percent of that workload is generated by majors. Thus, not only does the department have an inordinately strong service mission, but it can further be surmised that growth in other departments will be accompanied by additional demands upon the service load of Philosophy. On closer examination, it is evident that any resource reduction to a department of this type has serious implications for other departments throughout the University.

6. Total Student Course Enrollments: The total number of students enrolled in courses sponsored by the college or department is displayed by level of instruction, i.e., lower division, upper division, and graduate.

7. FTE Students Taught: In a concept different from FTE majors, "FTE Students Taught" are calculated by converting student credit hours into full time equivalent students to provide a measure of teaching load. National norms for this calculation assume that a full time undergraduate carries an average load of 15 student credits per semester, while that for graduate students is 9 credits. The 15 and 9 become the respective divisors for undergraduate and graduate student credit hours, resulting in a total full time equivalency generated from instructional workload.

8. FTE Faculty: Full time faculty on appointment within a department (i.e., chairs, tenure and tenure track faculty, instructors, lecturer, and visiting faculty) each carry a full time equivalency of 1.0. The full time equivalency for part time and supplemental faculty is calculated by dividing the teaching credit hours (generally equal to the credit value of a course) assigned to supplemental faculty by 12. (The University's collective bargaining agreement calls for a full time faculty administered load of 12 teaching credit hours/faculty.) The quotient full time equivalency for part time and supplemental faculty is then added to that for full time faculty to arrive at a total FTE Faculty sum.

9. Workload Ratios: Student Credit Hours/FTE Faculty, Students Enrolled/FTE Faculty, and FTE Students Taught/FTE Faculty are straightforward mathematical relationships between the data elements previously described. Coupled with the discrete data elements themselves,

these ratios constitute a valuable barometer for assessing the extent to which the "academic rachet" is operative within a given college or department.

NOTE: Data on student credit hours, percent taught by regular versus supplemental faculty, percent consumed by majors versus non-majors, course enrollments, FTE students taught and workload ratios are all displayed using both origin of course and origin of instructor analysis.

Having established relatively utilitarian measures of instructional productivity, the next step is to tie those measures conceptually to the resource allocation process. In doing so, it is useful to realize that most colleges and universities examine fiscal resources by object and by function. When an accounting office completes the IPEDS Finance Survey each fiscal year, expenditures are reported in such a way that those for instruction, research, public service, among others, are separately isolated. This is generally achieved through the use of "object codes" and "function codes" within each account transaction throughout the fiscal year. These codes enable the institution to account for what funds were spent on (i.e., object codes indicating faculty or professional salaries, travel, supplies, etc.) and for what reason (function codes indicating instruction, sponsored research, sponsored service, academic support, institutional support, etc.). The accounting system can be mined for a wealth of information that supports the academic productivity analysis described herein.

Returning to the Budget Support Summary and continuing the discussion of data elements, this time fiscal in nature:

11. Sponsored Research: Sponsored research activity for a given college or department is expressed in terms of total expenditures for organized (separately budgeted) research activity, as extracted directly from the University's accounting system. Sponsored research expenditures include both external and University sponsored activity charged to function codes 21 through 39.

12. Sponsored Public Service: Sponsored public service activity for a given college or department is reflected in terms of total expenditures for that activity, as extracted directly from the University's accounting system. As with sponsored research, sponsored public service includes both external and University sponsored activity charged to accounting function codes 41 through 43.

13. Total Sponsored Activity: This element is the sum of all sponsored research and sponsored public service expenditures as defined in items 11 and 12.

14. Sponsored Funds per FTE Faculty on Appointment: Total sponsored activity, as defined above, is divided by total full time faculty on appointment, as defined in item 8, "FTE Faculty."

If the workload ratios and other instructional productivity measures previously described are low or unstable for a particular college or department, it is appropriate to look at sponsored activity, as described above, as a possible measure for explaining the low instructional productivity. For example, Appendix D describes a department with a heavy instructional workload of in excess of 400 student credit hours/FTE faculty, 150 students enrolled/FTE faculty, and 31 FTE students taught/FTE faculty. Appendix E shows a department with just over 25 student credit hours/FTE faculty, 9 students enrolled/FTE faculty, and 3 FTE students taught/FTE faculty. The difference? The former teaches primarily undergraduates, and has no sponsored activity, while the latter teaches primarily graduate students, but shows in excess of $200,000 of sponsored research per FTE faculty member. Clearly the graduate students, in addition to classroom instruction, are in a highly productive research environment that likely contributes as much, if not more to their education than the classroom environment.

Another useful fiscal indicator is the cost of instruction, which can be manipulated to provide valuable measures of economy and efficiency.

15. Total Direct Instructional Cost: Total direct instructional expenditures for a given college or department have been extracted from the University accounting system. These direct costs of instruction are associated with accounting function codes of 01 through 08. The total direct instructional cost is then divided by the appropriate data element to yield three additional ratios, i.e., Direct Instructional Cost per FTE Major, per Student Credit Hour, and per FTE Student Taught. It should be underscored that these costs do **not** reflect the indirect cost of instruction.

Revisiting the two departments described above, direct instructional costs in the undergraduate department of $34,386/FTE major would normally make this department even more expensive than the graduate department at $23,264/FTE major. However, the heavy service load of the undergraduate department yields a direct instructional cost of $51/student credit hour against $1,240 for the graduate program, and $765/FTE student taught in the undergraduate program against $11,810/FTE student taught in the graduate program. Again, sponsored activity becomes a mitigating factor when looking at total cost efficiency.

Deans and department chairs have been known on occasion to view data from an institutional research office with skepticism and, on even rarer occasions, to openly dispute the numbers. In an area as sensitive as fiscal productivity ratios, it is therefore useful to pre-empt and dull potential criticism of the data by providing back-up documentation. The Office of Institutional Research and Planning provides detailed financial sheets to all departments and colleges. Each unit receives three revenue pages, one for each respective fiscal year, showing total revenues by category (tuition and fees, government appropriations, contracts and grants, etc.) and by fund type (i.e., basic budget, self-supporting, and restricted funds).

The revenue pages are followed by a single page summary of expenditures for each of the three fiscal years under examination, arrayed, by fund type, followed by six detailed expenditure summaries. For each of the three fiscal years there is a summary page showing expenditures by object and by function, and a second summary pages showing expenditures by object and by fund type. The credibility of the fiscal budget support ratios generated by Institutional Research and Planning has been substantially enhanced and criticism muted by the provision of the detailed supporting revenue and expense documentation. Readers wishing samples of these detailed sheets should contact the author.

Yet another way of looking at productivity is provided in the Budget Support Summary. Three key indicators have been created and calculated by the Office of Institutional Research and Planning.

16. Tuition Revenue: This is an estimate of the tuition revenue generated by majors within a college or department. For purposes of this estimation, total tuition revenue for credit bearing instruction in the Fall and Spring semesters of each fiscal year was divided by the total number of FTE majors enrolled for credit at the University in each of those semesters, yielding a University-wide "per FTE major" annual tuition rate. This rate was then multiplied by the annual average number of FTE majors in a college or department to arrive at an estimation of the tuition revenue generated by those majors.

17. Earned Income: Tuition revenues "earned" by a college or department as the result of instructional activity, measured in terms of student credit hours, is calculated here. A "per credit hour" tuition rate was estimated by taking the total tuition revenue for credit bearing instruction during the Fall and Spring semesters of a given fiscal year, and dividing by the total number of student credit hours taught during those semesters. The "per credit hour" tuition rate was then multiplied by the total number of credit hours taught by a college or department during the Fall and Spring to arrive at an estimation of the income "earned" by that college or department through instructional activity during that fiscal year.

18. Earned Income to Direct Instructional Cost Ratio: Earned income, as defined above, is divided by direct instructional cost, as defined in item 15, to arrive at a ratio which estimates the extent to which a department supports its direct instructional costs through teaching activity. Departments with ratios at or in excess of 1.0 "earn" more from tuition associated with student credit hour generation than the total for their direct instructional cost; the reverse is true where the ratio is less than 1.0.

In instances where a department's direct instructional costs exceed earned income from tuition associated with student credit hours (our graduate department example shows an income to expense ratio of less the 0.20), it is again useful to look at measures of sponsored research and service activity to determine the extent to which there are other returns on investment. Conversely, where sponsored activity ratios are low, as in the case of our undergraduate example department, the income to expense ratio becomes a focus. The undergraduate example has a ratio in excess of 4.0, indicating self support of direct instructional costs.

Too much should not be made of the 1.0 "watershed" ratio, as this reflects only direct instructional costs. Were indirect costs folded into the data used in this paper, the income to expense ratio would have to approximate 2.0 in order for all costs of instruction to be covered by earned tuition income.

One final cautionary note is sounded to users of the Budget Support Summaries. All of the management ratios developed in this analysis are intended to be viewed as barometers rather than empirical absolutes. Trend data are more important than a single year. Trend data which show apparent diminishing productivity or cost efficiency should be viewed as indicators that further, in-depth study is required to determine the underlying causes, certainly not evident within these data, for the downward trend.

Where do analytical strategies go from here? A first step being considered by the Office of Institutional Research and Planning is in the area of sponsored activity. The Budget Support Summary presently looks only at current year expenditures for sponsored research and sponsored service. However, fund awarding takes place frequently over several years, and it is useful to know the magnitude of active funding associated with a contract or grant that extends beyond the current fiscal year. The University has a proposal tracking system that enables Institutional Research and Planning to have access to two key pieces of data for all faculty involved in sponsored programs: 1. the number of proposals presently under consideration by funding agencies for which no final determination has been made; and 2. the total dollar value of awards received by faculty within a specific start date and end date for the life of the award. The former enables us to know, for individuals who have no sponsored activity expenditures during a given fiscal year, whether or not they have proposals in the pipeline. The latter gives us a sense for the magnitude and life span of currently awarded funding.

What is more difficult to measure is non-teaching activity that is not associated with some form of revenue or expenditure. The artist who has a number of works in a juried show is clearly adding to his/her field and at the same time enhancing the University's position within the discipline. The English professor who publishes a volume of poetry is doing the same. The Office of Institutional Research and Planning has thus far shied away from any attempt to quantify this activity. Debate over what constitutes a refereed journal or a legitimately juried exhibition is discussion that is best left to departments. Nonetheless, we are actively working with deans and department chairs to explore ways to capture this activity.

Finally, within the ratios that examine a given variable as it applies to Total FTE Faculty or FTE Faculty on Appointment, are we correctly accounting for faculty? Some deans argue that, as a part of the administered load, 50% of faculty time is devoted to research or public service. In such cases, should the denominator in a student faculty ratio be 0.5 FTE faculty and 0.5 in the sponsored funds per FTE faculty? Institutional Research and Planning has taken the position that Professor Jones is one full time faculty member. Deans take the position that where Professor Jones files an effort report with the Federal Government, he/she can be segmented. At this point, we are discussing the issue with no resolution on the horizon.

Final Thoughts

The purpose of faculty productivity analysis is not to demonstrate that faculty members are doing anything other than what they were hired to do. To the contrary, the data base is designed with the intention of reinforcing that faculty are indeed productive, and the information in the data base should enable deans and department chairs to more effectively utilize faculty resources in enhancing productivity in instruction, research, public service, and other areas central to the institutional mission. Data should never substitute for human judgment; however, good data can inform and improve the likelihood that any human judgment is the correct one. The methodology described in this paper is not a panacea; we do believe that it is a step in the direction of giving our senior and middle managers effective decision support tools.

APPENDIX A

REPORT ID: UPS/706
INSTITUTIONAL RESEARCH
TERM: Fall 1991

UNIVERSITY OF DELAWARE
UNIVERSITY PLANNING SYSTEM
FACULTY INSTRUCTIONAL WORKLOAD

SINU762C PAGE 105
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ORIGIN OF COURSE (ALL)

Newark Campus

College of Arts and Science

History

Name	Rank/ Course(s)	Sect(s)	Tenure/ Credits	Home Dept/ Course Type	(%) Load	Student Enrolled	Teaching Credits	Student Credits	S-Contract/ 2nd Instr.
A	**CHAIRPERSON**		**Yes**	**History**					**S=None**
	HIST268	1	3 Hrs.	REG SCHD	100.0	15.0	3.0	45.0	No 2nd Instr.
	TOTAL					**15.0**	**3.0**	**45.0**	
B	**PROFESSOR**		**Yes**	**History**					**S=None**
	HIST205	1	3 Hrs.	REG SCHD	100.0	100.0	3.0	300.0	No 2nd Instr.
	HIST307	2	3 Hrs.	REG SCHD	100.0	37.0	3.0	111.0	No 2nd Instr.
	HIST666	1	1-6	SUPV STUDY	100.0	1.0	1.0	3.0	No 2nd Instr.
	TOTAL					**138.0**	**7.0**	**414.0**	
	PROFESSOR		**Yes**	**Office of the Dean-Urban Affairs**					**S=None**
	HIST467	1	3 Hrs.	REG SCHD	100.0	8.0	3.0	24.0	No 2nd Instr.
	400-LEVEL SECTION MEETS WITH A 600-LEVEL								
	HIST652	1	3 Hrs.	REG SCHD	100.0	3.0		9.0	No 2nd Instr.
	CROSS LIST: URAF629 MSST629								
	600-LEVEL SECTION MEETS WITH A 400-LEVEL								
	TOTAL					**11.0**	**3.0**	**33.0**	
C	**PROFESSOR**		**Yes**	**History**					**S=None**
	HIST280	1	3 Hrs.	REG SCHD	100.0	72.0	3.0	216.0	No 2nd Instr.
	HIST645	1	3 Hrs.	REG SCHD	100.0	12.0	3.0	36.0	No 2nd Instr.
	CROSS LIST: MSST645								
	TOTAL					**84.0**	**6.0**	**252.0**	
D	**PROFESSOR**		**Yes**	**History**					**S=Overload**
	HIST102	1	3 Hrs.	REG SCHD	100.0	9.0	3.0	27.0	No 2nd Instr.
	HIST355	3	3 Hrs.	REG SCHD	100.0	33.0	3.0	99.0	No 2nd Instr.
	HIST604	1	3 Hrs.	REG SCHD	100.0	9.0	3.0	27.0	No 2nd Instr.
	HIST666	1	1-6	SUPV STUDY	100.0	1.0	1.0	3.0	No 2nd Instr.
	TOTAL					**52.0**	**10.0**	**156.0**	
E	**PROFESSOR**		**Yes**	**History**					**S=None**
	HIST666	1	1-6	SUPV STUDY	100.0	4.0	4.0	12.0	No 2nd Instr.
	HIST869	1	1-6	SUPV STUDY	100.0	1.0	1.0	6.0	No 2nd Instr.
	HIST969	1	1-12	SUPV STUDY	100.0	1.0	1.0	9.0	No 2nd Instr.
	TOTAL					**6.0**	**6.0**	**27.0**	

APPENDIX A, Continued

Newark Campus

College of Arts and Science

History

Name	Rank/ Course(s)	Sect(s)	Tenure/ Credits	Home Dept/ Course Type	(%) Load	Student Enrolled	Teaching Credits	Student Credits	S-Contract/ 2nd Instr.
REGULAR SCHEDULE COURSES	**LOWER DIV (000-299)**					**2,205.0**	**102.0**	**6,615.0**	
	UPPER DIV (300-499)					**919.0**	**75.0**	**2,757.0**	
	GRADUATE (500-999)					**130.0**	**33.0**	**390.0**	
	DEPARTMENT TOTAL					**3,254.0**	**210.0**	**9,762.0**	
SUPERVISED STUDY COURSES	**LOWER DIV (000-299)**								
	UPPER DIV (300-499)					**7.0**	**7.0**	**24.0**	
	GRADUATE (500-999)					**33.0**	**33.0**	**147.0**	
	DEPARTMENT TOTAL					**40.0**	**40.0**	**171.0**	
REG SCHD AND SUPV COURSES	**LOWER DIV (000-299)**					**2,205.0**	**102.0**	**6,615.0**	
	UPPER DIV (300-499)					**926.0**	**82.0**	**2,781.0**	
	GRADUATE (500-999)					**163.0**	**66.0**	**537.0**	
	DEPARTMENT TOTAL					**3,294.0**	**250.0**	**9,933.0**	

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APPENDIX B

REPORT ID UPS/706
INSTITUTIONAL RESEARCH
TERM Fall 1991

UNIVERSITY OF DELAWARE
UNIVERSITY PLANNING SYSTEM
FACULTY INSTRUCTIONAL WORKLOAD

SINU763C PAGE 097
09/08/92 16 42
ORIGIN OF INSTRUCTOR (ALL)

Newark Campus

College of Arts and Science

History

Name	Rank/ Course(s)	Sect(s)	Tenure/ Credits	Home Dept/ Course Type	(%) Load	Student Enrolled	Teaching Credits	Student Credits	S-Contract/ 2nd Instr.
A	**CHAIRPERSON**		**Yes**	**History**					**S=None**
	HIST268	1	3 Hrs.	REG SCHD	100.0	15.0	3.0	45.0	No 2nd Instr.
	TOTAL					**15.0**	**3.0**	**45.0**	
B	**PROFESSOR**		**Yes**	**History**					**S=None**
	EAMC869	1	3 Hrs.	SUPV STUDY	100.0	1.0	1.0	3.0	No 2nd Instr
	HIST205	1	3 Hrs.	REG SCHD	100.0	100.0	3.0	300.0	No 2nd Instr.
	HIST307	2	3 Hrs.	REG SCHD	100.0	37.0	3.0	111.0	No 2nd Instr.
	HIST666	1	1-6	SUPV STUDY	100.0	1.0	1.0	3.0	No 2nd Instr
	TOTAL					**139.0**	**8.0**	**417.0**	
C	**PROFESSOR**		**Yes**	**History**					**S=None**
	HIST280	1	3 Hrs.	REG SCHD	100.0	72.0	3.0	216.0	No 2nd Instr
	HIST645	1	3 Hrs.	REG SCHD	100.0	12.0	3.0	36.0	No 2nd Instr
	CROSS LIST: MSST645								
	MSST645	1	3 Hrs.	REG SCHD	100.0	1.0		3.0	No 2nd Instr
	CROSS LIST: HIST645								
	TOTAL					**85.0**	**6.0**	**255.0**	
D	**PROFESSOR**		**Yes**	**History**					**S=Overload**
	HIST102	1	3 Hrs.	REG SCHD	100.0	9.0	3.0	27.0	No 2nd Instr
	HIST355	3	3 Hrs.	REG SCHD	100.0	33.0	3.0	99.0	No 2nd Instr.
	HIST604	1	3 Hrs.	REG SCHD	100.0	9.0	3.0	27.0	No 2nd Instr.
	HIST666	1	1-6	SUPV STUDY	100.0	1.0	1.0	3.0	No 2nd Instr
	UNIV490	1	3 Hrs.	REG SCHD	100.0	3.0	3.0	9.0	No 2nd Instr
	TOTAL					**55.0**	**13.0**	**165.0**	
E	**PROFESSOR**		**Yes**	**History**					**S=None**
	HIST666	1	1-6	SUPV STUDY	100.0	4.0	4.0	12.0	No 2nd Instr
	HIST869	1	1-6	SUPV STUDY	100.0	1.0	1.0	6.0	No 2nd Instr
	HIST969	1	1-12	SUPV STUDY	100.0	1.0	1.0	9.0	No 2nd Instr.
	MALS610	1	3 Hrs.	REG SCHD	100.0	15.0	3.0	45.0	No 2nd Instr
	MALS666	1	1-12	REG SCHD	100.0	1.0	3.0	3.0	No 2nd Instr
	MALS879	1	3-6	SUPV STUDY	100.0	1.0	1.0	3.0	No 2nd Instr.
	TOTAL					**23.0**	**13.0**	**78.0**	

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                                          Newark Campus

                                   College of Arts and Science

                                            History

     Name              Rank/                 Tenure/   Home Dept/        (%)       Student    Teaching   Student    S-Contract/
                       Course(s)     Sect(s) Credits   Course Type       Load      Enrolled   Credits    Credits    2nd Instr.

REGULAR SCHEDULE COURSES  LOWER DIV (000-299)  ................................   2,152.0      98.0     6,384.0
                          UPPER DIV (300-499)  ................................     840.0      84.0     2,538.0
                          GRADUATE  (500-999)  ................................     116.0      30.0       348.0
                            DEPARTMENT TOTAL   ................................   3,108.0     212.0     9,270.0

SUPERVISED STUDY COURSES  LOWER DIV (000-299)  ................................
                          UPPER DIV (300-499)  ................................       6.0       6.0        21.0
                          GRADUATE  (500-999)  ................................      35.0      35.0       153.0
                            DEPARTMENT TOTAL   ................................      41.0      41.0       174.0

REG SCHD AND SUPV COURSES LOWER DIV (000-299)  ................................   2,152.0      98.0     6,384.0
                          UPPER DIV (300-499)  ................................     846.0      90.0     2,559.0
                          GRADUATE  (500-999)  ................................     151.0      65.0       501.0
                            DEPARTMENT TOTAL   ................................   3,149.0     253.0     9,444.0
```

FACULTY ACTIVITY ANALYSIS

COLLEGE: Arts and Science
DEPARTMENT: English
FACULTY NAME: John Doe

1989-90				1990-91				1991-92			
Course	Teaching Cr.Hrs.	Students Enrolled	Student Cr.Hrs.	Course	Teaching Cr.Hrs.	Students Enrolled	Student Cr.Hrs.	Course	Teaching Cr.Hrs.	Students Enrolled	Student Cr.Hrs.
FALL				FALL				FALL			
ENG110-01	3	21	63	ENG430-02	3	12	36	ENG110-01	3	30	90
ENG201-06	3	15	45	ENG630-02	3	2	6	ENG302-10	3	15	45
ENG467-78	3	1	3					ENG497-82	3	1	3
WINTER				WINTER				WINTER			
ARS320-01	3	23	69	No Teaching Activity				thtr101-01	3	27	81
SPRING				SPRING				SPRING			
ENG312-10	3	12	36	ENG111-10	3	25	75	No Teaching Activity			
ENG447-02	4	12	48	ENG697-89	4	1	4				
ENG697-89	2	2	4								
SUMMER				SUMMER				SUMMER			
FLLT212-04	4	30	120	FLLT212-04	4	27	108	FLLT212-04	4	27	108

Faculty Rank: Associate Professor

Tenure: Yes

1991-92 Annual Salary: $48,643

1991-92 External Funding: 0

Leave History: One-Half Year Sabbatical, Spring 1992

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APPENDIX D

BUDGET SUPPORT DATA
1989 - 90 THROUGH 1991 - 92

COLLEGE/DEPARTMENT: XXXXXXX

	FALL 1989	FALL 1990	FALL 1991	SPRING 1990	SPRING 1991	SPRING 1992	1989–90 ANNUAL AVERAGE	1990–91 ANNUAL AVERAGE	1991–92 ANNUAL AVERAGE
FTE MAJORS									
Undergraduate	30	28	21	32	29	27	31	28	24
Graduate	0	0	0	0	0	0	0	0	0
Total	30	28	21	32	29	27	31	28	24
DEGREES GRANTED									
Bachelor's Degrees	–	–	–	–	–	–	15	12	9
Master's Degrees	–	–	–	–	–	–	1	0	0
Doctorates	–	–	–	–	–	–	0	0	0
Total	–	–	–	–	–	–	16	12	9
STUDENT CREDIT HOURS (ORIGIN OF COURSE)									
Lower Division	6,379	7,370	8,398	6,254	5,958	6,016	6,317	6,664	7,207
Upper Division	549	469	655	714	665	1,100	632	567	878
Graduate	3	3	6	3	12	6	3	8	6
Total	6,931	7,842	9,059	6,971	6,635	7,122	6,951	7,239	8,091
% of Student Credit Hours Taught by Faculty on Appointment	na	85	91	na	83	91	na	84	91
% of Student Credit Hours Taught by Supplemental Faculty	na	15	9	na	17	9	na	16	9
% of Student Credit Hours Consumed by Departmental Majors	2	2	1	2	2	2	2	2	2
% of Student Credit Hours Consumed by Non–Majors	98	98	99	98	98	98	98	98	98

APPENDIX D, Continued

BUDGET SUPPORT DATA
1989-90 THROUGH 1991-92

COLLEGE/DEPARTMENT: XXXXXXX

	FALL 1989	FALL 1990	FALL 1991	SPRING 1990	SPRING 1991	SPRING 1992	1989-90 ANNUAL AVERAGE	1990-91 ANNUAL AVERAGE	1991-92 ANNUAL AVERAGE
TOTAL STUDENT COURSE ENROLLMENT (ORIGIN OF COURSE)									
Lower Division	2,139	2,458	2,814	2,090	1,986	2,006	2,115	2,222	2,410
Upper Division	189	157	219	238	241	414	214	199	317
Graduate	1	1	2	1	4	2	1	3	2
Total	2,329	2,616	3,035	2,329	2,231	2,422	2,329	2,424	2,729
FTE STUDENTS TAUGHT (ORIGIN OF COURSE)									
Lower Division	425	491	560	417	397	401	421	444	480
Upper Division	37	31	44	48	44	73	42	38	59
Graduate	0	0	1	0	1	1	0	1	1
Total	462	523	604	465	443	475	464	483	540
STUDENT CREDIT HOURS (ORIGIN OF INSTRUCTOR)									
Lower Division	6,379	7,477	8,182	6,254	5,976	6,166	6,317	6,727	7,174
Upper Division	546	637	741	711	752	1,126	629	695	934
Graduate	3	36	156	3	216	198	3	126	177
Total	6,928	8,150	9,079	6,968	6,944	7,490	6,948	7,547	8,285
% of Student Credit Hours Taught by Faculty on Appointment	na	85	94	na	84	91	na	85	93
% of Student Credit Hours Taught by Supplemental Faculty	na	15	6	na	16	9	na	16	8

APPENDIX D, Continued

BUDGET SUPPORT DATA
1989–90 THROUGH 1991–92

COLLEGE/DEPARTMENT: XXXXXXX

	FALL 1989	FALL 1990	FALL 1991	SPRING 1990	SPRING 1991	SPRING 1992	1989–90 ANNUAL AVERAGE	1990–91 ANNUAL AVERAGE	1991–92 ANNUAL AVERAGE
TOTAL STUDENT COURSE ENROLLMENT (ORIGIN OF INSTRUCTOR)									
Lower Division	2,138	2,493	2,754	2,090	1,992	2,056	2,114	2,243	2,405
Upper Division	188	213	247	237	270	420	213	242	334
Graduate	1	12	52	1	72	65	1	42	59
Total	2,327	2,718	3,053	2,328	2,334	2,541	2,328	2,526	2,797
FTE STUDENTS TAUGHT (ORIGIN OF INSTRUCTOR)									
Lower Division	425	498	545	417	398	411	421	448	478
Upper Division	36	42	49	47	50	75	42	46	62
Graduate	0	4	17	0	24	22	0	14	20
Total	462	545	612	465	473	508	463	509	560
FULL TIME EQUIVALENT FACULTY									
Department Chair	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Bargaining Unit Faculty	14.0	14.0	16.0	14.0	15.0	15.0	14.0	14.5	15.5
Supplemental Faculty	1.3	1.7	1.3	0.5	1.5	0.5	0.9	1.6	0.9
Total	16.3	16.7	18.3	15.5	17.5	16.5	15.9	17.1	17.4
WORKLOAD RATIOS (ORIGIN OF COURSE):									
– Student Credit Hours/FTE Faculty	425.2	469.6	495.0	449.7	379.1	431.6	437.5	424.4	463.3
– Students Enrolled/FTE Faculty	142.9	156.6	165.8	150.3	127.5	146.8	146.6	142.1	156.3
– FTE Students Taught/FTE Faculty	28.4	31.3	33.0	30.0	25.3	28.8	29.2	28.3	30.9
WORKLOAD RATIOS (ORIGIN OF INSTRUCTOR):									
– Student Credit Hours/FTE Faculty	425.0	488.0	496.1	449.5	396.8	453.9	437.3	442.4	475.0
– Students Enrolled/FTE Faculty	142.8	162.8	166.8	150.2	133.4	154.0	146.5	148.1	160.4
– FTE Students Taught/FTE Faculty	28.3	32.6	33.5	30.0	27.0	30.8	29.2	29.8	32.1

BUDGET SUPPORT DATA
1989 - 90 THROUGH 1991 - 92

COLLEGE/DEPARTMENT: XXXXXXX

	FISCAL YEAR 1990	FISCAL YEAR 1991	FISCAL YEAR 1992
FISCAL DATA			
A. RESEARCH AND SERVICE			
Sponsored Research	0	0	0
Sposored Public Service	0	0	0
Total Sponsored Activity	0	0	0
Sponsored Funds/FTE faculty on Appointment	0	0	0
B. COST OF INSTRUCTION			
Total Direct Instructional Cost	695,658	781,348	825,269
Direct Instructional Cost/FTE Major	22,441	27,577	34,386
Direct Instructional Cost/Student Credit Hour	50	54	51
Direct Instructional Cost/FTE Student Taught	750	809	765
C. REVENUE MEASURES			
Tuition Revenue	167,648	170,170	155,040
Earned Income	2,683,086	3,112,555	3,802,535
Earned Income/Direct Instructional Cost Ratio	3.86	3.98	4.61

APPENDIX E

BUDGET SUPPORT DATA
1989-90 THROUGH 1991-92

COLLEGE/DEPARTMENT: XXXXXXXXXXXX

	FALL 1989	FALL 1990	FALL 1991	SPRING 1990	SPRING 1991	SPRING 1992	1989-90 ANNUAL AVERAGE	1990-91 ANNUAL AVERAGE	1991-92 ANNUAL AVERAGE
FTE MAJORS									
Undergraduate	0	0	0	0	0	0	0	0	0
Graduate	78	86	88	75	84	86	77	85	87
Total	78	86	88	75	84	86	77	85	87
DEGREES GRANTED									
Bachelor's Degrees	–	–	–	–	–	–	0	0	0
Master's Degrees	–	–	–	–	–	–	12	11	17
Doctorates	–	–	–	–	–	–	11	7	9
Total	–	–	–	–	–	–	23	18	26
STUDENT CREDIT HOURS (ORIGIN OF COURSE)									
Lower Division	0	0	0	87	192	219	44	96	110
Upper Division	2	12	2	3	4	3	3	8	3
Graduate	672	709	705	669	715	706	671	712	706
Total	674	721	707	759	911	928	717	816	818
% of Student Credit Hours Taught by Faculty on Appointment	na	100	100	na	100	98	na	100	99
% of Student Credit Hours Taught by Supplemental Faculty	na	0	0	na	0	2	na	0	1
% of Student Credit Hours Consumed by Departmental Majors	92	84	90	80	66	69	86	76	79
% of Student Credit Hours Consumed by Non-Majors	8	16	10	20	32	31	14	24	21

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APPENDIX E, Continued

BUDGET SUPPORT DATA
1989 - 90 THROUGH 1991 - 92

COLLEGE/DEPARTMENT: XXXXXXXXXXXX

	FALL 1989	FALL 1990	FALL 1991	SPRING 1990	SPRING 1991	SPRING 1992	1989-90 ANNUAL AVERAGE	1990-91 ANNUAL AVERAGE	1991-92 ANNUAL AVERAGE
TOTAL STUDENT COURSE ENROLLMENT (ORIGIN OF COURSE)									
Lower Division	0	0	0	29	64	73	15	32	37
Upper Division	1	4	1	1	2	1	1	3	1
Graduate	265	255	242	269	251	251	267	253	247
Total	266	259	243	299	317	325	283	288	284
FTE STUDENTS TAUGHT (ORIGIN OF COURSE)									
Lower Division	0	0	0	6	13	15	3	6	7
Upper Division	0	1	0	0	0	0	0	1	0
Graduate	75	79	78	74	79	78	75	79	78
Total	75	80	78	80	93	93	78	86	86
STUDENT CREDIT HOURS (ORIGIN OF INSTRUCTOR)									
Lower Division	52	0	0	87	192	228	70	96	114
Upper Division	59	117	2	15	24	3	37	71	3
Graduate	694	747	817	712	743	740	703	745	779
Total	805	864	819	814	959	971	810	912	895
% of Student Credit Hours Taught by Faculty on Appointment	na	99	99	na	99	96	na	99	98
% of Student Credit Hours Taught by Supplemental Faculty	na	1	1	na	1	4	na	1	3

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BUDGET SUPPORT DATA
1989-90 THROUGH 1991-92

COLLEGE/DEPARTMENT: XXXXXXXXXXXX

	FALL 1989	FALL 1990	FALL 1991	SPRING 1990	SPRING 1991	SPRING 1992	1989-90 ANNUAL AVERAGE	1990-91 ANNUAL AVERAGE	1991-92 ANNUAL AVERAGE
TOTAL STUDENT COURSE ENROLLMENT (ORIGIN OF INSTRUCTOR)									
Lower Division	13	0	0	29	64	76	21	32	38
Upper Division	20	40	1	5	8	1	13	24	1
Graduate	270	269	283	285	263	272	278	266	278
Total	303	309	264	319	335	349	311	322	317
FTE STUDENTS TAUGHT (ORIGIN OF INSTRUCTOR)									
Lower Division	3	0	0	6	13	15	5	6	8
Upper Division	4	8	0	1	2	0	2	5	0
Graduate	77	83	91	79	83	82	78	83	87
Total	85	91	91	86	97	98	85	94	94
FULL TIME EQUIVALENT FACULTY									
Department Chair	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bargaining Unit Faculty	28.0	29.0	31.0	28.0	30.0	31.0	28.0	29.5	31.0
Supplemental Faculty	0.7	0.1	0.1	0.2	0.1	0.3	0.5	0.1	0.2
Total	28.7	29.1	31.1	28.2	30.1	31.3	28.5	29.6	31.2
WORKLOAD RATIOS (ORIGIN OF COURSE):									
– Student Credit Hours/FTE Faculty	23.5	24.8	22.7	26.9	30.3	29.6	25.2	27.5	26.2
– Students Enrolled/FTE Faculty	9.3	8.9	7.8	10.6	10.5	10.4	9.9	9.7	9.1
– FTE Students Taught/FTE Faculty	2.6	2.7	2.5	2.8	3.1	3.0	2.7	2.9	2.8
WORKLOAD RATIOS (ORIGIN OF INSTRUCTOR):									
– Student Credit Hours/FTE Faculty	28.0	29.7	26.3	28.9	31.9	31.0	28.5	30.8	28.7
– Students Enrolled/FTE Faculty	10.6	10.6	9.1	11.3	11.1	11.2	10.9	10.9	10.1
– FTE Students Taught/FTE Faculty	2.9	3.1	2.9	3.0	3.2	3.1	3.0	3.2	3.0

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BUDGET SUPPORT DATA
1989–90 THROUGH 1991–92

COLLEGE/DEPARTMENT: XXXXXXXXXXXX

	FISCAL YEAR 1990	FISCAL YEAR 1991	FISCAL YEAR 1992
FISCAL DATA			
A. RESEARCH AND SERVICE			
Sponsored Research	4,470,703	4,887,399	5,474,994
Sposored Public Service	764,865	1,057,807	974,421
Total Sponsored Activity	5,235,568	5,945,206	6,449,415
Sponsored Funds/FTE faculty on Appointment	186,985	201,532	208,046
B. COST OF INSTRUCTION			
Total Direct Instructional Cost	1,914,448	2,459,226	2,027,823
Direct Instructional Cost/FTE Major	24,917	28,932	23,264
Direct Instructional Cost/Student Credit Hour	1,336	1,507	1,240
Direct Instructional Cost/FTE Student Taught	12,341	14,290	11,810
C. REVENUE MEASURES			
Tuition Revenue	415,515	510,510	563,097
Earned Income	276,569	350,880	384,225
Earned Income/Direct Instructional Cost Ratio	0.14	0.14	0.19

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Exploring College Environment and Affective Change

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The purpose of this presentation is to demonstrate some quick ways to explore affective change using longitudinal data from the Higher Education Research Institute (HERI) freshman and follow-up surveys. Lacking a hypothesis about the role of college environment in affective change, the approach taken here is to address the question, "Is there anything in this data set that can shed light on how students change during the college years and on how their college experience might contribute to change?"

Background

In May 1991, we agreed to participate in a pilot on-campus administration of the HERI follow-up survey. This survey, administered to graduating seniors, asks some of the same questions that these students responded to as freshmen in the HERI freshman survey. Of the 1772 students receiving baccalaureate degrees in May 1991, 1668 (94%) completed the follow-up survey. We were able to match freshman and senior responses for 1042 students (62%). We were unable to match freshman responses for 626 graduates either because they did not complete the freshman survey at our institution or because they did not give their Social Security number. HERI, which conducts these national surveys, considers this to be an excellent match rate.

Variables

The focus is on change in ten attitudes. Freshman and senior attitudes were measured by asking about the following:

Community action -- the importance of "participating in a community action project"

Racial understanding -- the importance of "helping to promote racial understanding"

Environment -- the importance of "becoming involved in programs to clean up the environment"

Helping others -- the importance of "helping others who are in difficulty"

Death penalty -- the extent of agreement with the statement "the death penalty should be abolished"

Women -- the extent of agreement with the statement "the activities of married women are best confined to the home and family"

Busing -- the extent of agreement with the statement "busing is OK if it helps achieve racial balance in the schools"

Crime -- the extent of agreement with the statement "there is too much concern in the courts for the rights of criminals"

Political views -- far right, conservative, middle of the road, liberal, far left

Marijuana -- the extent of agreement with the statement "marijuana should be legalized"

College environment was measured by asking about major, satisfaction with 29 aspects of college experience, 16 academic and 14 general activities in the past year, allotment of time among 14 activities, and nine aspects of faculty availability. A complete list of the measures is included in the Appendix.

Method

The theoretical framework and the methodology for this presentation is Astin's Input-Environment-Output (I-E-O) model.[1] A series of ten regressions were computed with senior attitude dependent, controlling for freshman attitude, sex, ethnicity, and religion via stepwise entry in the first block, and stepwise entry of environment variables in the second block. This technique identifies a set of environment variables which are independently associated with change in attitude after controlling for differences due to sex, ethnicity, religion, and freshman attitude.

Describing Affective Change

For each of the ten attitudes, a change score was computed for each student by subtracting freshman attitude from senior attitude. Figure 1 shows that most students show no change in attitude during their four years in college; on the average, 48% of students do not change. When change in attitude does occur, it is usually moderate; on the average, 41% of students change in the "somewhat" range. More extreme change, in the "much" or "very much" range, occurs for 11% of students. Except for attitudes about women and crime, which have reversed scales, change occurs more frequently and is larger in the direction of more importance and more agreement.

Figure 1.

Frequency, Magnitude, and Direction of CHANGE

	Very Much Less	Much Less	Somewhat Less	No Change	Somewhat More	Much More	Very Much More
Community Action	0%	2%	16%	44%	30%	7%	1%
Racial Understanding	0%	2%	18%	46%	27%	6%	1%
Environment	0%	1%	12%	47%	30%	9%	1%
Help Others	0%	2%	17%	47%	30%	3%	0%
Death Penalty	1%	3%	15%	45%	23%	10%	3%
Women	2%	5%	21%	53%	12%	5%	2%
Busing	0%	3%	20%	49%	23%	5%	0%
Crime	1%	10%	33%	41%	13%	2%	0%
Political Views	0%	3%	17%	56%	20%	3%	1%
Marijuana	0%	2%	7%	54%	25%	10%	2%
Mean	1%	3%	18%	48%	23%	6%	1%

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[1] Astin, A. W. (1991). *Assessment for excellence: the philosophy and practice of assessment and evaluation in higher education.* New York, Macmillan.

A summary of the final statistics for each equation is included in the Appendix. The adjusted R^2 for the final equation, which describes the amount of variability in attitude which can be explained by input and environment, is shown in the first row. The adjusted R^2 after step one, which describes the amount of variability in attitude which can be explained by the input variables, is shown in the second row. The third row shows the amount of variability in attitude that can be explained by environment; it is the difference between the final R^2 and the R^2 after step one.

The remainder of the table shows the final beta values for the independent variables (environment) significantly ($p<.05$) associated with each dependent variable (attitude). For each measure of environment, the final beta describes its independent relationship with attitude after controlling for input characteristics and all other aspects of environment. The betas for the step one variables (input) and for the step two variables (environment) are presented in separate sections of the table.

How well can we explain output (attitude)?

A ranking of the adjusted R^2 for the final equations in descending order shows that political views are explained best by the I-E-O model, attitudes toward crime are explained the least (Figure 2).

Figure 2.
How well can we explain OUTPUT?

Adjusted R2* for Final Equation	
Political views	35
Racial understanding	33
Death penalty	30
Marijuana	28
Helping others	26
Community action	24
Women	24
Busing	21
Environment	17
Crime	15

* leading decimals omitted

Figure 3.
What is the role of INPUT?

Adjusted R2* for Step 1	
Political views	21
Death penalty	19
Racial understanding	17
Busing	16
Marijuana	14
Helping others	13
Women	13
Community action	10
Crime	10
Environment	08

* leading decimals omitted

What is the role of input?

A ranking of the adjusted R^2 after step one in descending order shows that input variables have the largest role in explaining political views and the smallest in explaining attitudes about the environment (Figure 3). 21% of the variability in political views can be explained by the freshman response. In other words, much of what we know about senior political views can be accounted for by the political views which the students held as freshmen. In contrast, only 8% of the variability in attitudes about the environment can be accounted for by the environmental views which students held as freshmen.

It is also interesting to note that sex, race, and religion are not independently associated with attitudes about community action, the environment, the death penalty, busing, crime, politics, and marijuana. However, greater importance of racial understanding is associated with being non-white, greater importance of helping others is associated with being non-Catholic, and greater support for traditional roles for women is associated with being male. (Appendix).

What is the role of college environment?

A ranking of the change in adjusted R^2 after step two in descending order shows that college environment has the largest role in explaining attitudes about race and the smallest in explaining attitudes about crime (Figure 4). 16% of the variability in attitudes about race can be explained by college experiences. In other words, college experiences are quite important in determining attitudes about race, but relatively less important in determining attitudes about crime.

Figure 4.
What is the role of ENVIRONMENT?

Adjusted R2* for Step 2	
Racial understanding	16
Community action	14
Political views	14
Marijuana	14
Helping others	13
Death penalty	11
Women	11
Environment	09
Busing	05
Crime	05

* leading decimals omitted.

What can we conclude so far?

We know the most about political views and racial attitudes. However, political views are more a function of input than they are of college experience. Racial attitudes, on the other hand, appear to be more amenable to the role of environment. Similarly, attitudes to community action are less associated with freshman attitudes than with the role of environment. Therefore, the findings are consistent with the assertion that college environment has a demonstrable effect on racial attitudes and attitudes to community action.

What aspects of college environment are most frequently associated with affective change?

Given the large number of measures of college environment, it is useful to identify those which are most frequently associated with affective change. The last column of Figure 5 is a simple count of the number of times each measure of environment is significantly associated with attitude. Participation in an anti-war demonstration is associated with change in six of the ten attitudes: community action, racial understanding, death penalty, busing, political views, and marijuana.

Four other aspects of college environment are associated with change in five of the ten attitudes. Doing volunteer work is associated with a giving greater importance to community action, environmental issues, helping others, opposing the death penalty, and becoming more politically liberal. Satisfaction with the diversity of the faculty is associated with giving less importance to racial understanding, greater support for traditional roles for women, less support for busing, less support for the rights of criminals, and becoming more politically conservative. Finding faculty who provide sponsorship for special educational programs is associated with giving greater importance to community action, racial understanding, environmental issues, and with opposition to the death penalty and becoming more politically liberal. Spending less time in classes and labs is associated with an increase in the importance of community action, racial understanding, environmental issues, opposition to the death penalty and support for busing.

Figure 5.
What aspects of ENVIRONMENT are most frequently associated with change?

	Betas* for Final Equations										
Participated in an anti-war demonstration	13	12			18		09		09	10	6
Performed volunteer work	21		07	13	07				07		5
SW** diversity of the faculty		-12				11	-06	08	-09		5
FWP*** sponsorship for special educational programs	08	10	09		09				08		5
Time spent in classes/labs	-06	-10	-09		-06		-08				5
Studied in the library	08			09	05				06		4
Felt like leaving college			11			13		08			3
Participated in an ethnic/racial student organization	08	09								06	3
Smoked cigarettes					06				05	11	3
Time spent watching TV		-08			-06				-08		3
Attended a racial/cultural awareness workshop		09					06	-08			3

* leading decimals omitted
** SW = Satisfaction with
*** FWP = Faculty who provide

What aspects of college environment are most strongly associated with affective change?

Given the large number of measures of college environment, it is useful to identify those which are most strongly associated with affective change. The last column of Figure 6 is the average of the absolute values of the betas for each significant measure of college environment. Several aspects of environment do not show up frequently, but when they do, they have a strong association with change. Time spent partying is associated increased support for the legalization of marijuana. Satisfaction with academic advising is associated with an increase in the importance of helping others. Attending religious services is associated with becoming politically more conservative and increased opposition to the legalization of marijuana. Socializing with someone of another racial/ethnic group is associated with increased importance of racial understanding and helping others. Satisfaction with campus social life is associated with increased support for traditional roles of women.

Two aspects of college environment are both frequently associated with change and strongly associated with change. They are participation in an anti-war demonstration and performing volunteer work.

Figure 6.
What aspects of ENVIRONMENT are most strongly associated with change?

	Betas* for Final Equations										
Time spent partying										14	14
SW** academic advising				13							13
Attended a religious service									-11	-13	12
Socialized with someone of another racial/ethnic group		12		12							12
SW** campus social life						12					12
Participated in an anti-war demonstration	13	12			18		09		09	10	12
Performed volunteer work	21		07	13	07				07		11
Felt like leaving college			11			13		08			11
SW** financial aid services							10				10
SW** overall college experience										-10	10
FWP*** recommendation for a job or graduate school				10							10
Worked on group projects in class			10								10
Time spent studying/homework						-11				-08	10

* leading decimals omitted
** SW = Satisfaction with
*** FWP = Faculty who provide

An Example: Racial Understanding

The regression analysis of attitude about race yields information about one third of the variability in this attitude. Half of what we can know is due to two input variables, freshman attitude and race. The other half of what we know is due to environment. A ranking of the betas in descending order shows that socializing with someone of another racial/ethnic group, participating in an anti-war demonstration and dissatisfaction with the diversity of the faculty are most strongly associated with an increase in the importance of racial understanding. Other aspects of environment that are associated with change include finding faculty who provide sponsorship for special educational programs, spending less time in classes and labs, participating in an ethnic/racial student organization, attending a racial/cultural awareness workshop, spending time commuting, taking an ethnic studies course, being a guest in a professor's home, spending less time watching television and more time reading for pleasure, and satisfaction with library facilities and the relevance of coursework to everyday life. From this listing, we can get a fairly clear picture of a student for whom the importance of promoting racial understanding is increasing. (Figure 7)

An Example: Community Action

The regression analysis of attitudes about community action yields information about one fourth of the variability in this attitude. Freshman attitude has less explanatory power than does college environment. To examine what we can know about the role of environment in changing attitudes about community action, we again rank the betas in descending order. Performing volunteer work is clearly the most important factor in change of attitude about community action. Other aspects of environment that are associated with change include participating in an anti-war demonstration, faculty who provide sponsorship for special educational programs, participating in ethnic/racial student organization, studying in the library, majoring in the arts and humanities, spending time using a personal computer, satisfaction with tutorial help and other academic assistance, satisfaction with student housing, time spent in clubs and groups, faculty who provide help cutting through "red tape," and spending less time in classes and labs. Again, we can get a fairly clear picture of a student for whom the importance of community action is increasing. (Figure 8)

Figure 7.
Promoting Racial Understanding

(Increase in importance is associated with:)

Step 2 (ENVIRONMENT)	Beta*
Socialized with someone of another racial/ethnic group	12
Participated in an anti-war demonstration	12
SW** diversity of the faculty	-12
FWP*** sponsorship for special educational programs	10
Time spent in classes/labs	-10
Participated in an ethnic/racial student organization	09
Attended a racial/cultural awareness workshop	09
Time spent commuting	08
Enrolled in an ethnic studies course	08
Been a guest in a professor's home	08
Time spent watching TV	-08
Time spent reading for pleasure	07
SW** library facilities	06
SW** relevance of coursework to everyday life	02
Adjusted R2* for Final Equation	33
Adjusted R2* after Step 1 (INPUT)	17
Change in Adjusted R2* after Step 2 (ENVIRONMENT)	16

* leading decimals omitted
** SW = Satisfaction with
*** FWP = Faculty who provide

Figure 8.
Participating in Community Action

(Increase in importance is associated with:)

Step 2 (ENVIRONMENT)	Beta*
Performed volunteer work	21
Participated in an anti-war demonstration	13
FWP*** sponsorship for special educational programs	08
Participated in an ethnic/racial student organization	08
Studied in the library	08
Major1: Arts & Hum	07
Time spent using a personal computer	07
SW** tutorial help or other academic assistance	06
SW** student housing	06
Time spent in clubs/groups	06
FWP*** help cutting through the 'red tape' at your college	06
Time spent in classes/labs	-06
Adjusted R2* for Final Equation	24
Adjusted R2* after Step 1 (INPUT)	10
Change in Adjusted R2* after Step 2 (ENVIRONMENT)	14

* leading decimals omitted
** SW = Satisfaction with
*** FWP = Faculty who provide

Conclusion

Returning to our initial question, "Is there anything in this data set that can shed light on how students change during the college years and on how their college experience might contribute to change," we can affirm the usefulness of this data set. We have been able to demonstrate and describe change in terms of its frequency, magnitude and direction. We have been able to separate the influence of characteristics which students bring with them when they enter college from the influence of the college environment. We have been able to distinguish attitudes that are subject to influence by the college environment from those that are not. We have been able to identify specific aspects of the college environment that seem to be more influential in the change process. And, in the process, we have isolated areas that are likely to be the most productive for further inquiry and for programmatic intervention.

Use of findings from inquiries like this, however, is subject to a number of caveats. The R^2s and the betas are often small – there is a great deal which we do not know. We have not demonstrated causality – only association has been shown. Therefore, the prudent use of these results will focus on enhancing our understanding of how affective change occurs rather than on efforts to predict or produce specific changes.

Appendix. Regression Summary

	Community Action	Racial Understanding	Environment	Help Others	Death Penalty	Women	Busing	Crime	Political Views	Marajuana
Adjusted R2* for Final Equation	24	33	17	26	30	24	21	15	35	28
Adjusted R2* after Step 1 (INPUT)	10	17	08	13	19	13	16	10	21	14
Change in Adjusted R2* after Step 2 (ENVIRONMENT)	14	16	09	13	11	11	05	05	14	14

Step 1 (INPUT)

Betas* for Final Equations

		Community Action	Racial Understanding	Environment	Help Others	Death Penalty	Women	Busing	Crime	Political Views	Marajuana	(frequency)	(magnitude)
Freshman response	(varies)	22	25	27	27	35	20	38	29	39	28	10	29
Sex: Female	SEX87						-16					1	16
Race: White	RACE871		-08									1	8
Religion: Non-Catholic	R87AG				07							1	7

Step 2 (ENVIRONMENT)

Betas* for Final Equations

		Community Action	Racial Understanding	Environment	Help Others	Death Penalty	Women	Busing	Crime	Political Views	Marajuana	(frequency)	(magnitude)
Participated in an anti-war demonstration	ACT9039	13	12			18		09		09	10	6	12
Performed volunteer work	ACT9014	21		07	13	07				07		5	11
SW** diversity of the faculty	SATIS27		-12				11	-06	08	-09		5	9
FWP*** sponsorship for special educational programs	FACAID3	08	10	09		09				08		5	9
Time spent in classes/labs	HPW9012	-06	-10	-09		-06		-08				5	8
Studied in the library	ACT9038	08			09	05				06		4	7
Felt like leaving college	ACT9032			11			13		08			3	11
Participated in an ethnic/racial student organization	COLACT16	08	09								06	3	8
Smoked cigarettes	ACT9002					06				05	11	3	7
Time spent watching TV	HPW9008		-08			-06				-08		3	7
Attended a racial/cultural awareness workshop	COLACT15		09					06	-08			3	8
Attended a religious service	ACT9008									-11	-13	2	12
Socialized with someone of another racial/ethnic group	ACT9004		12		12							2	12
Time spent in religious services/meetings	HPW9010					08		-09				2	9
SW** humanities courses	SATIS02				08		-08					2	8
Major1: Arts & Hum	MAJOR01	07								11		2	9
Time spent studying/homework	HPW9013						-11				-08	2	10
Time spent talking with faculty outside of class	HPW9014					-06		12				2	9
FWP*** a role model/someone to model yourself after	FACAID9						11		-07			2	9
Discussed course content with students outside of class	ACT9026				07		-08					2	8
Time spent commuting	HPW9009		08	09								2	9
SW** opportunities to participate in extracurricular activities	SATIS12						-08		-08			2	8
Enrolled in an ethnic studies course	COLACT13		08							08		2	8
Served as a resident advisor/assistant	COLACT21			-07	09							2	8
SW** personal counseling	SATIS17							09	07			2	8
Tutored another student	ACT9029			09						-07		2	8

Felt overwhelmed by all I had to do	ACT9006						-09		-06			2	8
Time spent working for pay	HPW9006								-07	08		2	8
FWP*** intellectual challenge and stimulation	FACAID8						-09	-06				2	8
Worked on an independent research project	ACT9024				08						07	2	8
SW** career counseling and advising	SATIS16				-07	-07						2	7
SW** interaction with other students	SATIS25			08		06						2	7
Been elected to a student office	COLACT10								06		-06	2	6
SW** relevance of coursework to everyday life	SATIS05		02						-09			2	6
SW** computer facilities	SATIS09				06		-06					2	6
FWP*** help cutting through the 'red tape' at your college	FACAID5	06				-06						2	6
Was bored in class	ACT9034			-06			06					2	6
Felt depressed	ACT9005									06	-07	2	7
SW** academic advising	SATIS15				13							1	13
SW** campus social life	SATIS13						12					1	12
SW** financial aid services	SATIS19							10				1	10
SW** overall college experience	SATIS29										-10	1	10
Time spent partying	HPW9005										14	1	14
FWP*** recommendation for a job or graduate school	FACAID4				10							1	10
Worked on group projects in class	ACT9027			10								1	10
Major3: Business	MAJOR03					-08						1	8
Major5: Engineering	MAJOR05				-08							1	8
Time spent socializing with friends	HPW9001			08								1	8
Did extra (unassigned) work for a course	ACT9035			08								1	8
Participated in campus protests/demonstrations	COLACT09									09		1	9
Been a guest in a professor's home	ACT9028		08									1	8
Participated in intramural sports	ACT9030								07			1	7
Major2: Biol Sci	MAJOR02									07		1	7
Had a part-time job on campus	COLACT04					07						1	7
Participated in ROTC	COLACT20										-07	1	7
Was actively involved in a student organization	COLACT23						-07					1	7
SW** ability to find a faculty or staff mentor	SATIS26				-07							1	7
Received career/vocational counseling	ACT9019			-07								1	7
Drank wine or liquor	ACT9013				-06							1	6
Time spent reading for pleasure	HPW9003		07									1	7
Time spent using a personal computer	HPW9004	07										1	7
Missed classes because of illness	ACT9031										07	1	7
Major7: Professional	MAJOR07										-06	1	6
Major8: Soc Sci	MAJOR08									06		1	6
Enrolled in honors or advanced courses	COLACT01								06			1	6
Graduated with honors	COLACT12					06						1	6
SW** library facilities	SATIS08		06									1	6
SW** tutorial help or other academic assistance	SATIS14	06										1	6
SW** student housing	SATIS18	06										1	6
Attended a musical recital or concert	ACT9001				06							1	6
Time spent exercising/sports	HPW9002				06							1	6
Time spent in clubs/groups	HPW9007	06										1	6
Failed to complete homework on time	ACT9033			-06								1	6

Variables Not Entering the Equations

Participated in a study abroad program
SW** leadership opportunities
Stayed up all night
Participated in a college internship program
Had faculty take personal interest in my progress
Major4: Education
Major6: Phys Sci
Major9: Technical
Major10: Other
Joined a fraternity or sorority
Gotten married
Had a part-time job off campus
Worked full-time while attending school
Taken remedial or developmental courses
Enrolled in a women's studies course
Worked on a professor's research project
Participated in intercollegiate sports
Participated in a leadership class/program
SW** science and mathematics courses
SW** science courses
SW** courses in your major field
SW** overall quality of instruction
SW** laboratory facilities and equipment
SW** opportunities to take interdisciplinary courses
SW** opportunities to discuss coursework
SW** amount of contact with faculty and administrators
SW** opportunities to attend films/concerts
SW** job placement services for students
SW** campus health services
SW** class size
Been lonely or homesick
Used a personal computer
Received personal/psychological counseling
Drank beer
Participated in organized demonstrations
Time spent on hobbies
FWP*** advice/guidance about your educational program
FWP*** emotional support and encouragement
FWP*** tutorial assistance or help improving your study skills
FWP*** honest feedback about your skills and abilities
Took an interdisciplinary coure
Studied with other students
Overslept and missed a class or appointment

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* leading decimals omitted
** SW = Satisfaction with
*** FWP = Faculty who provide

Inputs and Environment: Keys to College Outcomes

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For a number of years, Alexander W. Astin, the Director of the Higher Education Research Institute (HERI) at the University of California - Los Angeles, has argued that the proper way to assess colleges and universities is to examine their "talent development" results.[2] To Astin, talent development means determining the "value added" by the college. He suggests that this is done by examining the characteristics and abilities students bring to a particular college, the experiences they have during college which promote or detract from their education, and finally how much they know and how satisfied they are when they leave college. He calls this approach the I-E-O, or input-environment-output, model. In a recent book he explains in detail how such assessment might be conducted.[3]

While senior surveys have been administered shortly before graduation at Georgetown University for many years, we have not linked responses of individual seniors to answers they might have given to an entering freshman survey. In 1991, I approached the HERI staff with a request to use their "Follow-up Survey" as a senior survey to be administered on campus before graduation, as opposed to their normal method of mailing it to students during the summer following the second or fourth years after entering as freshmen. Since HERI had been approached with similar requests from other institutional researchers, they arranged for ten colleges and universities to use the 1991 Follow-up Survey as a senior survey in an experimental fashion. The pilot-test was so successful that they now plan to launch a "College Student Survey" designed to be administered at any time during college. For respondents who give permission, HERI will link answers to this new survey to those given to the entering Freshman survey, regardless of when or where students complete the first survey.

In 1991, 1,231 Georgetown seniors completed the HERI survey, for a response rate of ninety-two percent. In 1987, 925 of the 1,318 (70%) first-time full-time Georgetown freshmen completed the Freshman survey. This paper examines the responses of the 576 seniors (62% of 925) whose answers could be linked to the 1987 survey to see which of their answers to 175 questions in the two surveys explain variations in the answers to two basic questions in the senior survey: What was your average grade in college? How satisfied were you with your overall college experience? It will also look at the responses to a question concerning the goal of participating in community action programs. The mean responses of the two groups of students to the questions are listed below:

Survey Items:	Mean/n=1,213	Mean/n=576
Average College Grades: 1=B- or lower, 2=B, 3= B+/A-, 4=A	2.864	2.897
Overall College Satisfaction: 1=Dissatisfied, 2=Neutral, 3=Satisfied, or 4=Very Satisfied	3.157	3.245
Goal to Participate in Community Action Programs: 1=Not important, 2=Somewhat important, 3=Very important & 4=Essential	2.368	2.358

These numbers reveal that the group of seniors whose responses could be linked to their freshman survey responses had slightly higher college grades and were somewhat more satisfied with their overall college experience than were all respondents. Their goal for participating in community action programs was somewhat lower. Besides these comparisons, it was interesting to note that the average high school grades of the two groups were identical. All in all, the smaller group appears to be fairly representative of the larger one.

The statistical method used to examine the five questions noted above, stepwise regression, is described in considerable detail in Astin's book, Assessment for Excellence.[4] Essentially, this method estimates how much of the variation in the responses to a "dependent" variable, such as average college grades, can be explained by answers to "independent variables." These independent variables can be "input" responses, namely what students bring to college, such as their average high school grades, SAT scores, sex, parental income, or high school activities; or "environmental" responses, which refer to aspects of the college experience, e.g., academic majors, college activities, or satisfaction with various aspects of college. Forty-two input variables were included in these regressions: average high school grades, sex, race/ethnicity, parental income, SAT mathematics and verbal scores, religious preference, the degree of concern for financing college costs that they had as entering freshmen, and the frequency with which they participated in thirty-four activities in high school. As for the college experience, one hundred and thirty-three environmental variables were used, including college academic majors, hours spent in an average week in up to fourteen activities, possible participation in twenty-three college activities, the frequency with which they experienced any of thirty activities, the extent to which they believe they gained or lost any of twenty-two abilities or qualities, and their satisfaction with twenty-eight specific aspects of college life.

The table on the following page reveals the independent variables (both input and environmental) whose relationship with the dependent variable, average college grade, was sufficiently strong to be included in the final step of the regression. The numbers to the right of the variables estimate the magnitude of the effect that the input or environmental variables had on average college grades. The magnitude is measured by a standardized regression coefficient, or beta coefficient. The beta of high school grades is .30, or more than twice as large as either the SAT mathematics or verbal scores of .13 and .11 respectively. The beta of .12 for a student's race/ethnicity (in this case, white or non-white), and the beta of .07 for parental income indicates that higher college grades are associated with white students from families with high family incomes. The final "input" variables that the regression reveals are associated with higher college grades are responses of "feeling overwhelmed in high school" and "tutoring other students." In this case, it appears that a little tension or uneasiness appears to be a good thing. The first two environmental variables identified by the regression had negative beta coefficients. This meant that those with good grades were less likely to indicate that they "frequently" participated in organized demonstrations, -.15, and were less likely to indicate that they frequently missed classes due to illness, .14. Other variables with negative beta coefficients were gain in ability to influence others, -.12, "didn't complete homework on time," -.10, and holding a part-time job on campus, -.08. While frequent participation in demonstrations was shown to negatively affect grades, the positive beta of .12 for the fifth environmental variable, participation (versus simple non-participation) in campus demonstrations, seems to indicate that a little student activism is a good thing. Other environmental variables associated with high college grades are positive responses to gains in graduate school preparation, .12, gain in the ability to influence others, .12, majoring in foreign languages, .11, gain in confidence in academic skills, ..11, being a guest in a professor's home, .09, hours spent studying or doing homework, .08, enrolling in an honors program, .07, and using a personal computer, .07. Perhaps, the most interesting finding of this regression was the beta which showed the small predictive effect of hours studied per week. Considering that the regression held constant such input variables as high school grades and SAT scores, does this finding suggest that course requirements were easy, that some students study much more efficiently than others, or that grades were too uniformly high to distinguish the impact of hours studied? More research into this question seems to be necessary.

The cumulative "Rsq", or the statistical measure which estimates the total portion of the variation in the dependent variable -- in this case average college grades -- that can be explained by the independent variables which were found by the regression to be significant, was .41, or 41%.

Average College Grades: Mean 2.84 on 1-4 scale

Input Variables:	**Beta Coefficient**
Average high school grade	0.30
SAT Math Score	0.13
Student race/ethnicity	0.12
SAT Verbal Score	0.11
Parental Income	0.07
Felt overwhelmed in high school	0.07
Tutored another student in high school	0.07
Environmental Variables:	
Took part in organized demonstrations in college	-0.15
Missed class in college due to illness	-0.10
Gain in preparation for Graduate School in college	0.12
Gain in ability to influence others	-0.12
Participation in campus demonstrations	0.12
Major in foreign language in college	0.11
Gain in confidence in academic skills	0.11
Completed college homework on time	-0.10
Been a guest in college professors' homes	0.09
On-campus job in college	-0.08
Spent time studying or doing homework	0.08
Enrolled in honors program in college	0.07
Used a personal computer as a college senior	0.07

However, the beta coefficients, or magnitude, of the effect of the individual items and the cumulative Rsq tell only part of the story. Both measures are fairly theoretical and conceptual. Astin presents a graph which provides a visual representation of the maximum differences of the independent variables and relates them to the means, or averages, of both the dependent and independent variables.[5] Figure 1A, on the next page shows the effects of what the 1987 Georgetown freshmen brought to campus and Figure 1B estimates the effects of those environmental items in the senior survey that appear to explain their college grades. As the list of beta values revealed, the input variable with the highest effect is, not surprisingly, average high school grades. The left end of the first bar in Figure 1A indicates that a student who entered Georgetown with a B- average or lower would likely earn a college average of B or lower -- N.B. see the college grade scale at the bottom of the graph. The right end of the bar corresponds to the college grade, indicated by the point on the X axis on the bottom of the graph, that can be reasonably estimated for a student with an A/A+ high school average.

Figure 1A:

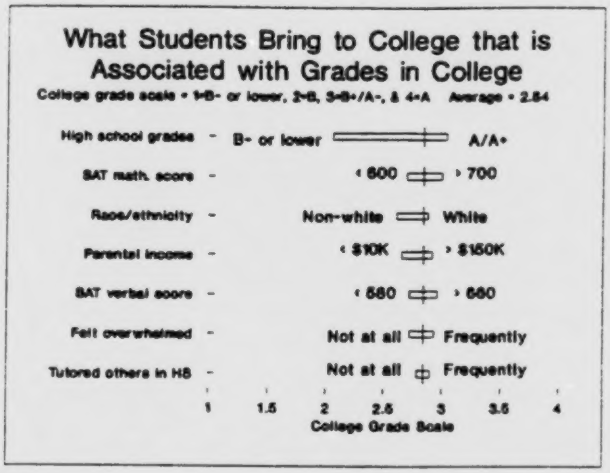
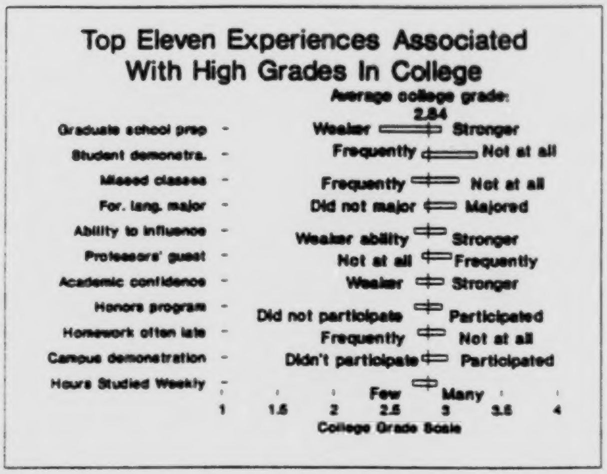


Figure 1B:



As opposed to college grades, where input variables were very important, only four input variables had any predictive effect on satisfaction with the overall college experience, and these contributed extremely little to predicting satisfaction. Not surprisingly, five of the twelve environmental variables that correlated with overall satisfaction had to do with satisfaction with specific aspects of college life. The two most important were satisfaction with the "overall quality of instruction" and satisfaction with "interaction with other students." As one might expect, Figure 2B shows that dissatisfaction with these aspects of college life had greater impact on predicting overall satisfaction than positive satisfaction. When looked at as a group, the overall satisfaction of Georgetown students with their college experience is heavily influenced by the quality of their interactions with other students and with faculty members. In this process, it is important to remember the roles played by student life and campus ministry personnel in facilitating and supporting the interactions with other students and creating opportunities to develop leadership and interpersonal skills. These findings are congruent with the findings not only of Astin, but of C. Robert Pace, Ernest T. Pascarella and Patrick T. Terenzini.[6]

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The graphs below highlight the differences between the input and environment variables on satisfaction with college. The list of beta coefficients is presented on the following page. For this regression, the cumulative Rsq was .5472.

Figure 2A:

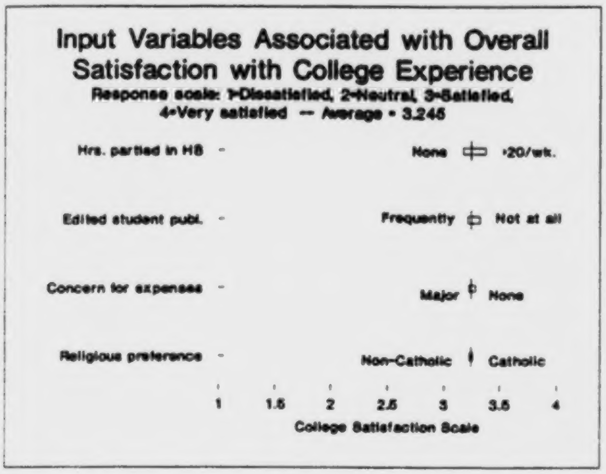
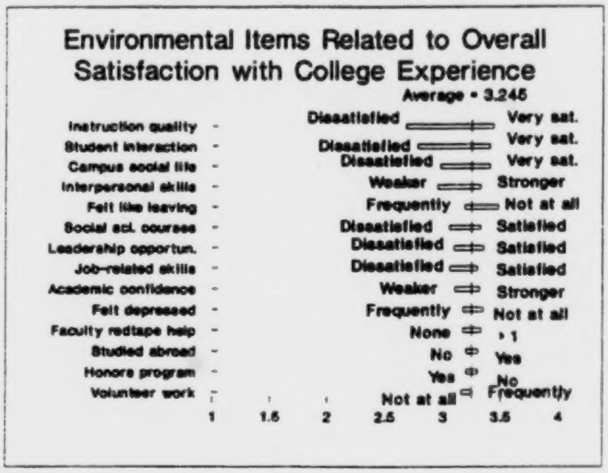


Figure 2B:



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Satisfaction With Overall College Experience: Mean=3.245

	Beta Coefficient
Input Variables:	
Hours partied per week in high school	0.07
Edited high school publication	-0.06
Concern about financing college	-0.03
Catholic religious preference as freshman	0.02
Environmental Variables:	
Satisfaction with quality of college instruction	0.23
Satisfaction interaction with other students in college	0.23
Satisfaction with college campus social life	0.21
Gain in job-related skills during college	0.18
Felt like leaving college	-0.14
College faculty helped cut through "red tape"	0.10
Gain in interpersonal skills in college	0.10
Satisfaction with college social science courses	0.10
Performed volunteer work in college	0.10
Satisfaction with leadership opportunities in college	0.09
Gain in confidence in academic abilities during college	0.08
Participated in study abroad program in college	0.07
Enrolled in college honors program	-0.07
Felt depressed in college	-0.07

As expected, personal goals that students bring to college frequently persist during college. This is confirmed by the fact that the largest input difference, listed below, in the goal that college seniors have to become involved in community action programs is the importance of that goal to them when they entered college. However, except for that freshman characteristic, the other three input variables identified by the regression had only a small predictive effect on the seniors' goal of participating in community action programs. On the other hand, twelve environmental variables were identified by the regression. Five of them were other goals. Next to the goal of promoting racial understanding, performing volunteer work in college had the highest beta coefficient, .19. While attendance at religious services had only a beta of .09, the graph on the following page reveals that frequent church or synagogue attendance is strongly associated with participating in community action programs. Interestingly, having the opinion that college raises one's earning power and frequent reading for pleasure are both negatively related to having community action participation as an important goal.

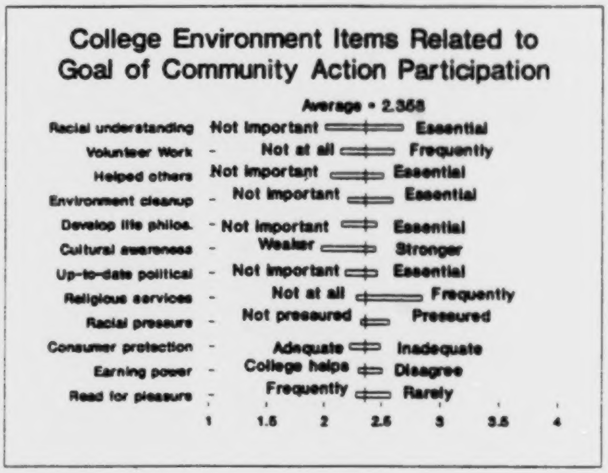
Goal as College Senior to Participate in Community Action Program: Mean = 2.358

	Beta Coefficient
Input Variables:	
Freshman goal: participate in community action program	0.19
Goal as freshman to have administrative responsibility	0.07
Student sex	0.06
Political view as a freshman	-0.02
Environmental Variables:	
Goal as college senior of promoting racial understanding	0.24
Performed volunteer work as college senior	0.19
Goal as college senior to help others in difficulty	0.13
Senior goal to be involved in environmental cleanup	0.12

	Beta Coefficient
Environmental Variables (Cont'd):	
Goal as college senior to develop a philosophy of life	0.11
Gain in cultural awareness during college	0.10
Goal as college senior to keep up to date with politics	0.09
Attended religious services as college senior	0.09
Pressured to not socialize with other racial/ethnic groups	0.07
View that government is not protecting consumer	0.07
Opinion that college raises earning power	-0.06
Read for pleasure as a college senior	-0.06

Since the only input variable that was strongly associated with the senior goal of participation in community action programs was the corresponding freshman goal, only the environmental variables are presented in the graph below:

Figure 3A:



This exercise in using stepwise regression to examine relationships between, and among, the responses students gave to two surveys separated by four years of college was quite worthwhile. However, it was only the first time that such a comparison was made at Georgetown. The three examples included in this page are meant to generate two types of questions from my colleagues at Georgetown and elsewhere. First of all, these results raise further questions. For instance, what could account for the weak relationship of hours studied and grades in college? Is this weak relationship common in responses of students from other colleges and universities? Answers to questions such as these may be found in the responses to the 1987/1991 surveys, or they may have to be sought in answers to other questions in a future survey, or in special focus group sessions. However, before plans are made for follow-up studies, the 1991 survey instrument needs to be reviewed to see if there are additional questions for which the stepwise regression technique should be used to identify related input and environmental variables. Once other important questions are identified and data are examined to see if any answers are suggested, the ultimate question becomes what practical steps should be taken to address the concerns raised or support the strengths identified. The new book by Astin, What Matters in College: Four Critical Years Revisited will be a useful reference tool in examining both questions.[7]

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In this brief look at Georgetown student responses, I was struck by how much they supported a number of the points made by Astin in an address last year:

> What, then---if anything---in the undergraduate experience seems to matter as far as student outcomes are concerned? While our results are not yet final, we can see some distinctive patterns emerging. To begin with, the manner in which the curriculum is implemented seems to be much more important than the actual form or content of the curriculum. I refer here to the types of instructional methods used, the nature of faculty-student relations, and especially the quality and quantity of student contacts with the peer group. Peer groups seem to be especially important in affecting students' values and beliefs, as well as their level of satisfaction with the undergraduate experience.[8]

Footnotes

[1] Besides the work of Alexander W. Astin cited below, I wish to express my appreciation for an earlier paper, and an accompanying SPSS program, on affective outcomes of college prepared by Eva Nance of the University of Notre Dame. William Korn, of UCLA's Higher Education Research Institute, also offered helpful suggestions. Of course, none of these people should be held accountable for any errors I might have made in applying their work in this paper.

[2] Astin, A.W. 1985. Achieving Educational Excellence, San Francisco: Jossey-Bass

[3] Astin, A.W. 1991. Assessment for Excellence: The Philosophy and Practice of Assessment and Evaluation in Higher Education, San Francisco: Jossey-Bass.

[4] Ibid., Appendix, pp. 255-313.

[5] Ibid., p. 111.

[6] Pace, C. Robert, 1990. The Undergraduates: A Report of Their Activities and Progress in College in the 1980's, Los Angeles: UCLA Center for the Study of Evaluation and Pascarella, Ernest T., and Terenzini, Patrick T., How College Affects Students: Findings and Insights from Twenty Years of Research, San Francisco: Jossey-Bass, 1991.

[7] Astin, A.W., 1993. What Matters in College: Four Critical Years Revisited. (San Francisco: Jossey-Bass).

[8] Proceedings of the June 7-12, 1991 Asheville Institute on General Education, Washington: Association of American Colleges, p. 45.

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Exploration of Some Rules for Comparative Analysis of Student Subgroups

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Offices of Institutional Research are asked to provide data on various types of students. Enrollments, academic performance and persistence indicators, and survey responses frequently are presented not only in terms of the total college student population but also in terms of students categorized by the following: gender; ethnic group; age entering abilities; semester standing; major field of study; residential, financial, or athletic status; and personal interests of the student.

Descriptive statistics appearing in IR Factbooks typically include data for each value of the subgroup characteristics (e.g., female, male) as well as for the total population (e.g., females and males combined). But how should an Office of Institutional Research conduct an analysis of a specific student subgroup when it is asked to determine the college' effectiveness in educating and serving that subgroup? How does it obtain information on the status of a subgroup in relation to the rest of the student population?

This presentation focuses upon one student subgroup - athletes - and research literature on comparative studies between student athletes and student nonathletes. Athletes were chosen because there is an extensive body of research and because the subgroup sometimes is subdivided by demographic characteristics.

Some of the recent research literature was examined and summarized to answer the following questions about comparative analyses of student subgroups:

1. How are comparison groups selected?
2. What variables are analyzed in conjunction with the comparison?
3. Does the comparison group and variable selection differ in surveys, experiments, and analyses of institutional student records?

A total of 41 research studies were examined, including 25 surveys or studies involving self-report instruments, 6 experiments or program treatments, and 10 analyses of student record system data. Four tables summarize some elements in the comparisons of athletes and nonathletes. On each table the elements are categorized by the three types of reviewed research (surveys, experiments, and student records).

Table 1 provides information on parameters beyond athletic/nonathlete status used in the selection of comparison groups. Half of the surveys and the student records analyses restricted the comparison groups to either males or females. All but one of the student records analyses examined multiple years of data. Experiments, with one exception, ignored parameters beyond the athlete/nonathlete status.

Table 2 indicates the sampling procedure for selecting the athlete and nonathlete groups. The primary sampling method is shown if more than one was applied. The population or a random sample drawn from it is the basis of 90 percent (9 out of 10) of the student records analyses. The population was used in 5 of the 6 experiments for athletes. Volunteers or class sessions were the source for the experimental control (nonathlete) group. Surveys relied mainly on team meetings, practices, or study halls for athletes and on class sessions for nonathletes.

Table 3 indicates the sample sizes for the athlete and nonathlete comparison groups. Experiments use the smallest samples. Student record analyses extract the largest samples. The reviewed studies include a wide range of sample sizes.

In Table 4 are listed the demographic variables either described or controlled in the comparisons. Gender is a major variable in all three types of research. GPA, semester standing, and ethnic/racial identity are included in 7 of the 10 student records analyses and in one-fourth or more of the surveys. Seven of the student records analyses also focus on entering abilities of students and on graduation/persistence rates. Socio-economic status and major are included in at least 6 of the surveys The experiments do not consider variables beyond gender (in 3) and major (in 1).

Sports variables also are listed in Table 4. Surveys and student records analyses included a variety of sport characteristics. Specific sport was the most used, in 90 percent of the student records analyses and in 28 percent of the surveys. No sports variables were included in the experiments.

Based on the review of the athlete-nonathlete research, some general observations are made about comparative analyses of student subgroups:

1. Comparative studies on college campuses typically involve data collection from students in intact groups gathered together for some purpose. In the majority of the reviewed research, team practices or study halls provided subjects for the athlete subgroup and classes in academic courses provided subjects for the nonathlete subgroup (after students identified as athletes were deleted from the class roster).

2. Random selection of responses from intact groups (e.g., team meetings, classes) does not solve the basic sampling flaw of the intact group.

3. Random selection of intact groups does not transform the intact group into a random sample. However, any selection of a large number of diverse groups/classes increases the group's approximation to the population.

4. Sophisticated sampling techniques - such as systematic random sampling and stratified random sampling - can be employed in the analysis of existing data in the institution's student record system. For these techniques, the fields sampled need to have data for every student.

5. The techniques also can be applied to the selection of students to include in the collection of new data. However, the costs of contacting the individuals selected and ensuring their participation in the research is prohibitive for most studies on most campuses.

6. When possible, information from the institution's student record system should be reported on the populations (or random samples of the populations) from which the samples are drawn. The information can be used both for evaluating the representativeness of the samples and to provide supplementary data about the two groups.

7. Reporting of demographic characteristics (age, gender, ethnic distribution, semester standing, entering ability levels, school/major) of the population as well as the obtained sample (however it was selected) helps the reader evaluate the goodness of the sample.

8. In sampling a student subgroup, the larger the sample, the closer it will approximate the subgroup population. The subgroup population was included in 9 of the 10 reviewed studies using student record system data.

9. Matching non-random samples in terms of 2 or 3 characteristics (e.g., semester standing and major) for studies involving issues about those characteristics (e.g., opinions about academic

advising) may make readers more comfortable with findings presented from the comparison of the groups. Two common methods of matching samples are: (1) random deletion of subjects to equate numbers in each sample for each value of the variable; and (2) random deletion of subjects to produce sample numbers per value proportionate to the distribution of the characteristic in the population.

10. Where there are grossly unequal sample sizes, random deletion of cases from the larger sample may make sense.

11. When any adjustment is made to the initially drawn sample, and before it is compared to another group, statistical tests should be applied to the original and adjusted samples to confirm the before- and after-samples are substantially the same.

12. When possible, oversize the samples drawn to permit systematic matching, to enable analysis of sample subgroups, and to accommodate non-respondents and missing data.

13. Statistics that confirm the comparability of two groups, e.g., Wilks' Lambda Test of Equality or Pillai's Criterion, should not overstate the equality. They do not solve the basic problem of non-random samples. However, they may make readers more comfortable with the results.

14. Academic performance and success studies may be more meaningful where there is a statistical control for entering ability, semester standing, and major.

15. Where follow-ups have been used to increase the size of either sample, the demographic characteristics of the initial group, the first follow-up additions, and subsequent follow-up responding groups should be reported. Readers need to know whether the late respondents are similar to the initial group or whether they change the composition of the sample.

16. It is useful to conduct a pilot study involving students with characteristics of interest in the planned comparison (e.g., starters vs. substitutes on the varsity teams; males vs. females) and to try out the survey items. Pilot results give the researcher an idea of the range of responses to expect from the survey and the appropriateness of the questions for the planned research.

The above observations from a review of research on one student subgroup - athletes - suggest some common elements and procedures for comparative studies. Can these observations be generalized to comparison of other student subgroups?

Table 1
Parameters to Comparison Group Selection Besides Athlete/Nonathlete Status
(Reported by at least 2 studies)

	Student Records		Experiments		Surveys	
	n	%	n	%	n	%
Males only	5	50.0	-	-	7	28.0
Females only	-	-	1	16.7	6	24.0
Entering freshmen	4	40.0	-	-	1	4.0
Ethnic/racial identity	-	-	-	-	2	8.0
Multiple years of data	9	90.0	-	-	2	8.0
Data from more than one institution	-	-	-	-	4	16.0
Total comparison studies (may be multiple parameters per study)	10		6		25	

Table 2

Sampling Procedures for Comparison Groups
(Primary method if more than one)

	Student Records		Experiments		Survey	
	n	%	n	%	n	%
Athlete Group:						
Population	9	90.0	5	83.3	2	8.0
Random sample-simple	1	10.0	-	-	1	4.0
Purposive-team meeting, team practice, athletic study hall	-	-	-	-	12	48.0
Category derived from responses to questionnaire given in class or other purposive group	-	-	-	-	5	20.0
Volunteers or unspecified	-		1	16.7	5	20.0
Total comparison studies	10	100.0	6	100.0	25	100.0
Nonathlete Group:						
Population	3	30.0	-	-	-	-
Random sample-stratified or systematic	4	40.0	-	-	-	-
Random sample-simple	2	20.0	-	-	3	12.0
Purposive-class session	1	10.0	2	33.4	5	60.0
Category derived from responses to questionnaire given in class or other purposive group	-	-	-	-	5	20.0
Volunteers or unspecified	-	-	4	56.6	2	8.0
Total comparison studies	0	100.0	6	100.0	25	100.0

Table 3

Initial Sample Size in Comparison Groups
(Before non-responses and invalid responses are omitted)

	Student Records	Experiments	Survey
Athlete Group:			
Minimum	87	18	22
Mean	359.4 *	44.2	135.2
Maximum	2,876	79	350
Nonathlete Group:			
Minimum	100	18	16
Mean	376.1**	34.7	103.6
Maximum	22,005	60	231
Total comparison studies	10	6	24 ***

* Based on 9 analyses with a range of 87 to 781; excludes the maximum.

** Based on 8 analyses with a range of 100 to 900; excludes the maximum (22,005) and the next highest value (9,188).

*** Excludes one study with no information on numbers of athletes vs. nonathletes.

Table 4

Variables Considered in the Comparison

	Student Records		Experiments		Survey	
Demographic:	n	%	n	%	n	%
Gender	9	90.0	3	50.0	20	80.0
Age	1	10.0	-	-	5	20.0
Ethnic/racial identity	7	70.0	-	-	7	28.0
High school ACT/SAT, rank	7	70.0	-	-	2	8.0
College GPA	7	70.0	-	-	7	28.0
Major	4	40.0	1	16.7	6	24.0
Semester standing	7	70.0	-	-	6	24.0
Graduation/attrition rate	7	70.0	-	-	-	-
Socio/economic status	-	-	-	-	7	28.0
Other	5	50.0	-	-	5	20.0
Total comparison studies	10		6		25	
Sport:						
Specific sport	9	90.0	-	-	7	28.0
Contact vs. non-contact	1	10.0	-	-	3	12.0
Team vs. individual	-	-	-	-	3	12.0
Starter vs. substitute	2	20.0	-	-	3	12.0
Athletic financial aid	4	40.0	-	-	1	4.0
Major vs. minor	2	20.0	-	-	1	4.0
Competitive vs. recreational	-	-	-	-	3	12.0
Other	1	10.0	-	-	3	12.0
Total comparison studies	10		6		25	

Studies Comparing Student Athletes and Nonathletes

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Completers' Perspectives of Their Higher Education Experiences

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Introduction

Each year university administrators and faculties participate in commencement exercises to award students diplomas that represent their attainment of baccalaureate degrees. Each conferred degree is a symbol of an individual's endurance and perseverance that symbolizes hours of classroom lectures, hours of study, and hours of testing as well as the preparation of numerous course or term papers. The commencement event is filled with smiles, tears of joy, hugs of friendship and laughter.

Often concurrent with this special event, administrators and faculties are actively engaged in decision making processes regarding what courses should be offered the next academic year, who will teach these courses, what types and levels of financial aid should be provided, what support services should be offered, etc. Some of the choices and decisions to be made are very straightforward and require little thought or discussion. The more difficult ones require the completion of special studies, faculty/staff reviews and recommendations, and detailed assessments of policy impact.

The current economic climate has been a complicating factor that has made the decision making process more difficult. Because of substantial changes to resource allocations, institutional administrators and faculty are forced to decide on programmatic or service reductions. Such programmatic decisions often affect quality programs that universities do not desire to modify.

Due to the increased complexity of these decisions, evaluative information about the educational experiences of students is increasingly valuable. The thoughts and perspectives of graduating seniors is a desirable source of information. As a group, graduating seniors are the principal "consumers" of the courses and services that are being reviewed and potentially altered. This consumer group possesses a wealth of information that can guide and direct the planning decisions that administrators and faculty are attempting to resolve.

The tough decisions that confront an institution will result in refining and altering its overall mission. Thus, the critical nature and impact of these decisions mandate that more and better information be utilized in the decision making cycle. Consumer information acquired from graduating seniors should be a key component in decisions that ultimately review and refine an institution's mission.

Background

Acquiring assessment or evaluative information from students or graduates is a recognized component of the university planning and review processes. Assessments of academic climates and cultures, evaluations of student recruitment and retention programs, assessments of student program needs, reviews of the teaching-learning environments, and alumni surveys are efforts that make use of student or alumni data. Brief discussions of several of these topics are presented below in order to illustrate the role and use of student evaluative information in institutional review and planning processes.

Heydinger (1980) notes that effective academic planning can increase the likelihood that fundamental academic values are considered and that institutions remain vital throughout difficult periods. Such academic planning efforts include a focus on topics such as: identifying the educational needs of students, determining specific characteristics of effective teaching and learning environments, and analyzing program resources requirements. Lenning (1980) outlines eight steps to the conduct of an educational program needs assessment process. Throughout this assessment process Lenning indicates that the context of the assessment should included information related to factors such as: faculty, staff and student attitudes and values; the availability of financial, staff, time and other resources; and political relationships and pressures.

Alumni surveys have a long history in programmatic efforts designed to review the outcomes of higher education. In general, these surveys often focus on (a) attitudes and perceptions of educational experiences related to the employability of students or graduates, (b) employment plans of graduating students, and (c) types and levels of jobs secured by graduates. In a review of literature presented by Pettit (1991) three focal areas of alumni surveys are suggested: (1) assessment of vocational preparation; (2) alumni satisfaction with, and perceived utility of, humanities programs; and (3) comprehensive assessments that address a wide variety of outcome measures, including alumni careers, further education, citizenship activities, evaluation or educational programs and services, and the effects of educational debt.

Studies that focus on the climate and culture of higher education institutions, attempt to understand how these variables influence the decision making processes and institutional goals. Baird (1990) indicates that information concerning campus climate serves several purposes. Such information can be used to (1) determine areas of agreement and disagreement among an institution's significant subgroups and sub-environments about policies, goals, facilities, and priorities; (2) aid in understanding the influence of campus life on post-adolescent socialization and personal development; (3) assess interpersonal relations on the campus; (4) measure the conditions surrounding learning; and (5) analyze relations among students professors and administrators.

In sum, assessment data obtained from students and graduates plays an important role in the review and planning process. Whether institutions are reviewing past program initiatives or looking to the future in order to redefine or reaffirm its mission and goals, a wealth of information can be gleaned from students and graduates.

One Approach

Similar to many institutions of higher education, the University of Rochester initiated review and planning processes in preparation for its entry in the 21st century. During the 1990-91 academic year, the University had fully implemented its efforts to develop its plans and visions for the year 2000. As institutional staff began their look to the future, they realized that the current graduating classes would be critical constituent groups. They recognized that within a decade, members of these graduating classes would be highly involved and established in their careers and, thus, would be influential to employer/university relations, would be highly potential alumni donors, and would be active participants in their children's decisions and the decisions of relatives and peers regarding what institution one would attend to pursue post-secondary educational goals. In addition, current institutional administrators had inaugurated several initiatives over the preceding 6 to 8 years and desired feedback regarding the efficacy of these changes from the student's perspective. Thus, this look to the future and reflection on the past served as the impetus to acquire evaluative information from graduating seniors concerning their perceptions of their undergraduate experiences.

The remaining sections of this paper provide a discussion of the Senior Review Project (SRP) implemented by the University of Rochester to obtain information from graduating seniors related to their undergraduate experiences. Following a brief discussion about the rationale and institutional expectations for the SRP, its general data collection plan and methodologies are highlighted as well as principal results and recommendations.

Survey Sample and Design

The University of Rochester's Senior Review Project (SRP) has been undertaken for two consecutive years. All of the full-time graduating seniors were included in the sample to be surveyed. Part-time students could contact the university's research office to be included in the survey. The SRP consists of two parts: a one-to-one interview of open-ended questions designed to elicit seniors' personal experiences at the university; and a written survey of close-ended questions rating satisfaction and personal growth. University administrators served as interviewers because they were highly motivated to inquire about the candid thoughts of graduating seniors related to their undergraduate experiences while attending the University.

In 1991, 150 staff members volunteered as interviewers, and 165 participated in 1992. Included with these groups were: the President and his staff, student service staff from Financial Aid, the Registrar, Bursar, Academic Advising, Placement, Student Employment, Residential Life, Campus Ministry, Dining Services, Admissions recruiters, Development and Alumni Affairs fund-raisers and event coordinators, as well as administrators in the Dean's office, Finance, Parking, computer programmers all participated as interviewers. In the coming years, constituencies of the faculty, librarians, trustees, and alumni groups may be included.

Interviewers conducted on-on-one interviews with seniors in order to gain information about their perspectives of program and services, overall quality, post-graduation plans, and recommendations. A response rate of 65% was achieved for senior interviews both years. However, we found that between 10-15% of those not responding had outdated or incorrect address or phone information. This finding was, in fact, one of the first unintended benefits of the Project. The frustration that the interviewers experienced led to the formation of a problem-solving team that worked on improving the address/phone information contained in the student database.

Survey Implementation

Written surveys were distributed to all full-time seniors the end of February, followed by reminder postcards in March, and a second survey in April. The basic format of the written survey included questions on post-graduation plans, satisfaction with education, services, facilities, a rating of areas of growth, and a few questions on current campus issues. The first year, 998 questionnaires were distributed, and a total of 348 completed questionnaires were returned for a response rate of 35 percent. An increased response rate of 48 percent was achieved for the 1992 SRP with the return of a total of 503 completed questionnaires.

Interview implementation began earlier in the academic year. About the middle of December, invitation cards were sent to all the staff members who had participated as interviewers in the preceding SRP. We asked these staff members to identify other staff members they knew who did not participate in the project the previous year or who were new to the University, as well as identify dates and times they would be available for an introductory meeting on the SRP. The Class of '92 was significantly larger than the year before, more interviewers were needed.

All interviewers attended an introductory session/workshop on the SRP. At the introductory session, the volunteer interviewers were given 5-7 interview sheets labeled with a student's name, phone number, and address, as well as postcards introducing themselves and the SRP to the student. Students were expecting to hear from the interviewers, because they had received a letter from the President inviting them to participate in the SRP during the first week of spring classes. Then about a week after the postcards had been sent out, interviewers followed up individually with phone calls to schedule interviews with seniors at mutually convenient times.

The interviews lasted, on average, an hour, though the time varied. Some students were more talkative than others, and some interviewers were more skilled at drawing out reticent students than others. Students were asked to talk about:

- Why they decided to attend the University of Rochester,
- Their expectations of UR when they entered,
- Whether those goals and expectations had changed,
- What they wished they knew about UR before they came, and how knowing that would have changed their experience here,
- What they expected to be doing the year following graduation, and how well they felt their experience had prepared them for that goal,
- What they expected to be doing 3-5 years following graduation, and how well they felt, whether their experience had prepared them for that longer term goal,
- How satisfied they felt with the quality of instruction,
- From whom they got information on choosing courses, and the helpfulness of that information,
- From whom they got information on choosing a major, and the helpfulness of that information,
- Which of the foundation courses they found most beneficial,
- What the most interesting course was, and why it was interesting,
- Satisfaction with interaction of faculty with students, students and staff, students and University administration, students with other students,
- Satisfaction with the quality of social life,
- If they could change one thing about UR, what it would be,
- Whether the University had changed during their tenure, and whether the change or lack of change was good,
- Areas where the University did particularly well,
- Areas where the University could have done better, and
- If they had to make the decision again, whether they would attend the University of Rochester.

Results and Conclusions

General findings

In the first cycle of SRP, interviewers expressed surprise at finding seniors to be so self-confident and proud of their accomplishments. This finding was confirmed in the second cycle by new interviewers. The following general findings were noted:

- 60% of the students said a Rochester education had a great impact on their ability to function independently,
- 90% indicated moderate or great impact,
- Half said the University had greatly improved their ability to learn independently, to think analytically, to understand themselves, and to gain an in-depth knowledge of a field of study, and
- Approximately six out of seven indicated the University had a moderate or great effect on these areas.

Typical of the comments made by students was the one who said he would "not be going on to graduate school if he had not come to UR. Graduate school was less intimidating because of "surviving" Rochester".

A recurring theme within the interviews that also was echoed in the written survey was students' surprise at the quality of education - 93% expressed satisfaction with their education, and almost a third said they were "very satisfied" with their Rochester education. Questions about foundation courses and what students found to be the most interesting course they took were added in the '92 review project.

Most interesting courses

As one might imagine, a wide variety of courses were named as "the most interesting course taken at the University of Rochester." The reasons given for why these courses were so interesting were quite varied as well, though not altogether surprising. They included: a course with a good instructor no matter what the topic; a course that is small, that promotes lively discussion; a course that is relevant/applicable to life and that pulls together and applies the concepts learned in the major. Some of the courses named in this category included Digital Circuits, Small Group Dynamics, Cell Development, and Energy Development in Africa. Other categories included courses that help a student know himself or his culture more fully, such as Alternative Forms of Medicine, Psychology of Women, Black Intellectuals, and Theories of Personality. Not surprisingly, some of the courses named were within the student's major or concentration - that positioned the student for her next step, whether it be graduate school or a job (Aging and Public Policy, Business Law, Thermodynamics, OPT392, Medical Sociology were some of the ones named). Departmentalism does not dominate however - students were as likely to include courses that were completely outside one's major - something totally different. Students noted the strengths of the Rochester faculty when they took courses outside their area of concentration.

Faculty interaction

Many students felt they had not made significant personal contact with faculty during their freshman and sophomore years. Specifically, they noted that when they enrolled they expected there to be more. Students thought large freshman classes, the use of TAs in freshman classes, the faculty's presumed focus on research as well as teaching, and the realities of growing up (one student described it as being "wrapped up in homesickness and homework") were contributing factors.

In late spring 1991, the leadership of the College of Arts and Sciences, where all freshmen and sophomores enroll, changed. Based on the results of the '91 SRP, the new leadership of the College set about addressing students concerns about their feelings of being lost in a crowd the first two years. Two half-time Deans were named, a Dean for Freshman and a Dean for Sophomores. These positions rotate so that one person stays with a class for two years. Also questions were added to the interview format for the '92 SRP to explore advising issues further.

Academic advising

From the additional questions posed the second year, the majority of students (approximately 75%) perceive themselves as keeping their own counsel when choosing courses and their major, although 65% of them reported seeing a faculty member three or more times about their course of study. They rely on the bulletin and course offering lists for information on scheduling, and turn to friends for information on the quality of the course and instructor and the requirements of the course. Students are willing to go to formal sources of information, but if given poor information do not go again. Friends' experience with these formal sources also have a ripple effect on their own trust level, either positively or negatively. Because students rely on themselves, they sometimes get caught making false assumptions. For example, students have been surprised that a particular course is not offered every year, creating problems in meeting degree requirements in a timely fashion.

Comparisons of '91 and '92 SRP results show that '92 students generally seemed more positive. They were pleased with the changes in the College of Arts and Sciences. They seemed more ready to blame themselves or each other when things didn't go well, rather than blame the University. Perhaps because there were no highly publicized issues involving great numbers of students, the criticisms seemed scattered and lacking focus.

Diversity and community

For an institution of its type, Rochester is racially, ethnically, and economically quite diverse. Thus it was not surprising to see that student perceptions of political, ethnic and racial diversity differed widely - about 28% thought racial/ethnic issues were a "serious and extensive" problem, and the same percentage thought that the issue was not a problem or a minor one at best. Some commented they thought the campus was diverse in numbers, but not in experience - that students isolated themselves in "cliques" during freshman year, and did not leave those small groups for four years. Students perceived that these little groups stay to themselves, and don't invite other groups to join in activities with them. Racial and ethnic background were only one of the factors which divided students - economic diversity (the "haves" and the "have nots"), age, housing (on-campus vs. commuting students), Greek membership/non-membership, political beliefs - all seemed to hinder rather than enrich the experience of community. Students were surprised at these experiences - they had expected each other and the University to be more sophisticated in dealing with these issues.

Dispelling local myths

There were findings that were unique to the University of Rochester. For example, the campus, physically bounded by the Genesee River, a city park, and a cemetery, is viewed as a closed community. A commonly-held myth is that students don't take advantage of the opportunities in the city. Perceptions may not match reality, however: 73% reported attending city events, 81% had gone to a local museum or art gallery, and 79% had attended an Eastman concert or recital (the Eastman School of Music is in a separate, downtown campus).

Unintended benefits

While there were many other findings in the survey, one positive and unintended outcome was the interviewers' reactions to interviewing students. New employees were able to learn about campus life in a way they would not have otherwise, and experienced employees learned about changes in student attitudes. Staff who did not have contact with students (accountants, computer programmers) become "connected" to the University's mission in a way that their daily work did not allow. Mental health workers were pleasantly surprised to talk with healthy, confident, and happy students. And all of the interviewers, in the focus groups, were able to discuss overriding campus issues, rather than just their own departmental concerns, gaining a new perspective to their work.

Follow-up

These and other findings were mailed to the participating class, along with a letter of thanks from the president. Findings were also sent to deans and directors, as well as all of the participating interviewers in the project. More specific academic and administrative departmental comments from the '92 SRP are still being compiled to be sent, first to the divisional vice-presidents or deans, and then to all directors and department chairs.

Educational significance

Having entered the decade of the 90's, institutions of higher education are confronted with a host of problems resulting from current budgetary constraints as well as the need to develop a viable foundation for success in the 21st century. The SRP is capable of addressing both of these diverse needs.

The assessment information provided by graduating seniors identifies those undergraduate programs and services that require immediate refocusing or improvement. Further, once issues are addressed and improvements implemented, positive results can be cycled back to the respondents, both formally and informally, serving to build the needed networks with alumni that will have a positive impact on the institutions in the coming decades.

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Marketing and Development: Implementing Bachelor Degree Programs at a Two-Year Institution

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Abstract

Changing market demands, responding to the needs and wants of students and defining new market niches are just three reasons why a two-year college would seek to offer students a bachelor degree option. This paper focuses attention on a two-year career-oriented college that seeks to offer four-year bachelor degree programs in the areas of Business Administration and Legal Studies in a proposed "two-plus-two" format. This decision was driven by the philosophy and mission of the College yet was well grounded in institutional and market research.

Introduction

Education is not just a process but a product as well. It is from the latter description in which marketing concepts emerge. Key concepts such as consumer demand, market niche and competition all play a dialectical role in defining the product and reinforcing the process. For most collegiate institutions, the 1990s will be a decade of transition -- a decade where the ability of an institution to match its services to student needs will be tested. Those institutions that can best meet marketplace demands will flourish; those institutions that are less successful in this endeavor will struggle. The debate on whether an institution should change its complexion with the changing need of the educational marketplace can be debated on both a philosophical and financial level. The intent of this paper is to focus on the quantitative aspect of how a decision was made by an institution to steadfastly retain its well-respected two-year career program format but also continue to strive to meet the needs of both students and the marketplace by offering a bachelor degree in selected areas.

In today's competitive marketplace, the necessity of a college degree in specific career paths has become greater than ever before. The ascribed status of a bachelor degree greatly enhances employability and increases the likelihood of career advancement. Yet, for many careers, a terminal associate degree still remains the degree of choice (e.g. physical therapy assistant, respiratory care, radio, television, criminal justice, and so forth). It is the primary challenge of any institution to understand both its mission and its market niche. The contemplation by this institution to offer its students a bachelor degree option resulted from a series of meetings involving faculty, administrative staff, alumni and students. By moving in this direction, the institution believes it is meeting the aspirations of its faculty, the employment needs of its students, and its educational obligation that it remains true to its mission statement.

Throughout the whole process, the institution was sensitive to its career-orientation and to the changing demands of the marketplace. It was determined that faculty and students would be the primary determinant in the decision to pursue a bachelor degree option. After many meetings it was decided that the institution should move forward with its proposal to offer its students a bachelor degree option. However, in order to affirm its belief in its career-orientation, the institution decided to pursue the bachelor degree option in a *two-plus-two* format. This unique two-step format offers students the opportunity to earn both an associate and bachelor degree.

It was clear from the onset that the institution would work to maintain its image as the academic leader in the two-year college market. The institution would remain student-centered and would continue to place great emphasis on developing close faculty/student relationships. The uniqueness of the *two-plus-two* approach lets the institution proceed in this direction.

Under this proposed format, the traditional two-year college student will still earn the associate degree. Once the associate degree has been attained, the student has a real choice; either s/he can enter the job market with well-developed skills or choose to continue their education at the institution for an additional two years and attain a bachelor degree. This two-step format underscores the institutional philosophy that the implementation of a *two-plus-two* bachelor degree program is intended to enhance rather than replace the two-year associate degree. Two-year institutions will continue to hold an important place in the educational system. Two-year, career-oriented colleges enable students to gain specific knowledge and skills to help them meet the demands of the professional job market. In its ideal, the associate degree gives the career-oriented student the skills, knowledge and experience necessary to compete for many professional positions. The bachelor degree option will serve to give two additional years of breadth and dimension to the skills and knowledge already obtained. The *two-plus-two* model then, maintains the well-defined pre-professional nature of the two-year institution while it provides the additional opportunity for students to obtain a bachelor degree. This model builds on the institution's strength and the market potential of the two-year degree. Moreover, this format provides further intellectual stimulation to the campus environment in which students are already comfortable and confident.

Market Research

Recent market studies provide support to the decision to offer bachelor degrees in the areas of business administration and legal studies. The Office of Employment Projections of the United States Bureau of Labor Statistics predicts a growth of 18 million jobs in the next decade -- and these jobs will mainly be in the service area. Growth in all fields of business administration is expected to be above the average. Buttressing this point, the Labor Statistics Bureau approximates that the number of jobs in business professions will increase by an average of 24%.

While job opportunities are increasing, employers are also becoming more selective in their employment hiring process. The number of qualified candidates in the work force has grown, giving employers a greater pool from which to choose. Increasingly, management positions are not being defined as entry-level. Access to, and movement in, these types of positions are normally attained through *working your way up* or by entering into a management training program -- a program that, in more and more instances, has a bachelor degree requirement. It is becoming increasingly evident that some business career paths demand more refined skills from its students than can be scheduled into a two-year curriculum. Clearly, the information above underscores the point that a *two-plus-two* program would benefit all interested students when they embark on a career path.

Survey Methodology

From an institutional standpoint, the decision by a traditional two-year college to pursue four-year degree programs was a complicated one. The decision has ramifications in many areas -- academics, enrollment planning, marketing and recruitment, facilities, institutional mission and financing. After consultation with faculty, students and other key administrators, it was determined that the bachelor degree option needed to be explored through both market and institutional research. This paper will focus attention strictly on institutional research data gathered from a survey conducted in the College's Division of Continuing Education (DCE).

At the end of the Spring 1992 semester, a survey was completed by 1,982 DCE students. Twelve different campus sites were surveyed since analyzing all available sites would make it possible to identify regions that would support the bachelor degree offerings. The surveys were handed out during class and participation was voluntary. The purpose of the survey was to gather information on the goals and interests of current students - particularly their level of interest in continuing their education beyond the associate degree level.

Along with attitudinal data, the survey collected a variety of demographic information on the students, including age, ethnicity, sex, current level of education, and educational aspirations. The students were asked to measure the level of importance they assigned to a variety of issues such as tuition costs, general reputation, and quality of instructors. Similarly, respondents were asked to assess the quality of the institution in these same issues.

The survey also asked *two-plus-two* specific questions. Survey respondents were asked to list their primary goals in taking Continuing Education courses and to describe their level of interest in each proposed bachelor degree program (seven different bachelor degree offerings were explored: Legal Studies, Business Administration, Communications, Fashion Merchandising, Health Service Administration, Hotel/Restaurant Management, and Interior Design).

In order to understand the nuanced differences within this large constituency, three key market segments were defined. Each market segment is defined below.

- *Educational Aspirations.* Students were classified into two groups. The first group consists of students who have educational goals of a bachelor degree or higher (N=601). The second group consists of students with less lofty educational aspirations of an associate degree or less (N=651).
- *Continue Education at Same Institution.* Students were classified into two groups. The first group consists of students expressing a strong desire to pursue their bachelor degree at their current institution (N=1112). The second group consists of students expressing a less than strong desire to continue on to their bachelor degree at this institution (N=681).
- *Business Administration or Legal Studies Major.* Students were classified into two groups. The first group consists of students who are currently majoring in either business administration or legal studies (N=993). The remaining students who have a designated major form the second group (N=635).

Each market segment will play a key role in determining the enrollment viability of *two-plus-two* bachelor degree program. Each market segment will shed further light on the issues students deem important and the on the quality assessment of the institution on these salient issues.

Demographic Profile

Respondents to the survey were more likely to be female (79%), white (85%), and below the age of 36 (76%). Each respondent was asked to indicate when s/he had last been in formal education. One third of the population had formal schooling within the past two years. More than half (51%) of the group, however, had not been in school for at least five years. With regard to marital status, 50% of the group was single while 39% were married. The majority of this sample (70%) were classified as freshman (completed less than 30 credit hours.)

When asked to state the highest level of education they had attained, the majority of the students (75%) responded "high school graduate/GED." A bachelor's degree or higher had been earned by 9% of the population. When queried about their educational aspirations, the largest single group of students (35%) declared that they intended to pursue a bachelor degree or higher, 25% aspired to an associate degree, while 27% were satisfied with a high school diploma/GED.

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As an aside, the students in this population are mainly enrolled in the college's business administration department. Three majors stand out in popularity: 24% of respondents declare their major to be business administration, 14% major in paralegal studies, while 10% major in accounting.

The proportion of business students is of paramount importance to this study as it reinforces the point that business and legal studies are the appropriate programs in which to offer a bachelor degree option. This supposition is based on the number of students currently enrolled and the level of interest in these programs. When taking into account both day and continuing education, the business department is the college's largest.

Educational Goals

Before launching any endeavor the question *why* needs to be addressed before one asks *how*. In this instance, an understanding of what motivates a student to chose to pursue further education will help an institution to see how it can facilitate achievement of that goal. To this end, survey participants were asked to describe their primary goal in taking continuing education classes. The overwhelming response was to earn a degree -- with slightly more students attending classes in order to obtain a four-year degree as opposed to a two-year degree.

To supplement this information the students were given a list of fields under consideration for bachelor degree programs at the college. The students were requested to describe their level of interest in each field. The most attractive bachelor degree option was Business Administration, with 46% of those responding indicating that they would be interested in a bachelor degree in this program. Legal Studies and Health Service Administration (26% and 25%, respectively) were also cited by a large number of students.

In order to further clarify the educational goals and interests of this population, three more specific statements were presented to the students. These statements were rated on a five-point scale where 1=*strongly disagree* to 5=*strongly agree*. When evaluating the statement, "*I think a bachelor degree is likely to increase my employability upon graduation*", 74% of the respondents strongly agreed (rating of 5 -- the mean rating for this statement was 4.48). 62% of those surveyed also strongly agreed (rating of 5) that they "*would continue at this college if a two-plus-two program were to be added in their field of study.*" (the overall mean rating for this statement was 4.19.). "*An associate degree is all I need to succeed in my career field*" received ratings of strongly to moderately disagree (rating of 1 or 2) by 61% of the sample (mean rating of 2.19).

Data Analysis

Important Characteristics

In order to determine what students want from the educational process, it is necessary to examine what they deem most important in their decision to pursue their education. The participants in this survey were asked to evaluate a series of twenty-two items in terms of their importance as they relate to their decision to continue their education. Responses were based on a scale of one to five where **1=Not at all Important** and **5=Extremely Important**.

The most important items cited by these students all involve the academic offerings of the college. Course Offerings was rated most important (4.69), followed closely by Quality of Instructors (4.63), Ability to Earn a Degree (4.59), and Program Offerings (4.55).

When the analysis focused on the issue of educational aspirations, students with higher educational aspirations were more concerned with Transferability of Credits and, not surprisingly, the Ability to Earn a Bachelor Degree. Conversely, those students whose educational goals were not as high were most concerned with more tangible issues including Job Placement, Availability of Financial

Aid, and Job Requirements. Similarly, these students place more importance on personal support services including Available Assistance, Campus Director, and Small School Environment.

Chart 1 displays the results of a Chi-Square Automatic Interaction Detector test (CHAID). This sophisticated *goodness-of-fit* statistical technique was utilized in an attempt to uncover the subtle interactions which occur between the items evaluated in terms of importance and the three previously defined market segments.

The first CHAID analysis focuses attention on the market segment defined by whether or not a student was interested in pursuing a bachelor degree. Among all DCE students, the percentage of students aspiring to at least a bachelor degree is 48%. The CHAID diagram shows that this percentage is increased to 56% if these respondents place a high level of importance on the Ability to Earn a Bachelor Degree item. When Availability of Financial Aid is not cited as extremely important, the concentration of high-aspiring students is 69%. The percentage rises to 75% when Job Requirements are not cited by these respondents as being an extremely important item as it relates to their educational pursuits.

The second CHAID analysis presented in Chart 1 focuses on the second market segment: students' interest in remaining at the college. This CHAID analysis predicts which students would continue at the same institution based upon the level of importance assigned to each characteristic. The percentage of students who would pursue a bachelor degree at this institution is increased from 62% to 75% when the Ability to Obtain a Bachelor Degree is rated extremely important. This finding is extremely important given the fact that over 60% of all respondents rate this item a "5". The percentage is further augmented when these same students view Convenient Location as extremely important. Lastly, among this select group of students, the percentage increases to 81% when Academic Challenge is rated extremely important.

The last CHAID analysis presented in Chart 1 looks at students who major in business administration or legal studies. At the onset, 61% of the sample are majoring in these two areas. When the respondents rated Job Placement Record as not at all important, the percentage of students within these two majors increases to 77%. The percentage increases further to 83% when Academic Challenge is rated somewhat to extremely important. This last finding suggests that among these students, it is not so much the career aspect that is driving their educational choices but it is the academic rigor that they are experiencing. More importantly is the group of 599 students who state that Job Placement is very important. Although only 51% are business administration or legal studies majors, the percentage in these two majors rises to nearly 60% when the focus of attention turns to the Offering of a Bachelor Degree.

Chart 1

CHAID Analysis: Important Characteristics

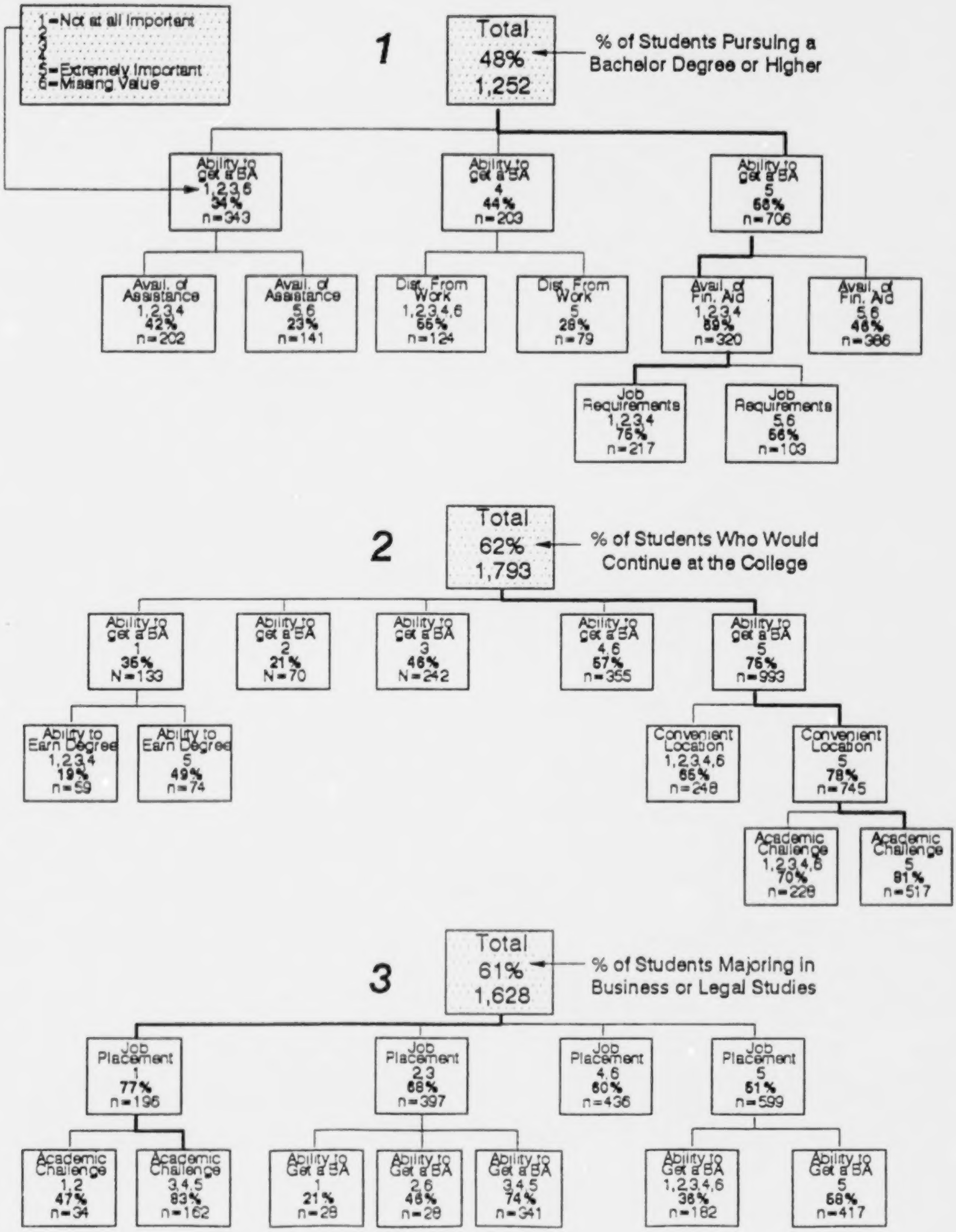
1=Not at all important
2
3
4
5=Extremely Important
6=Missing Value
1
Total
48%
1,252
% of Students Pursuing a Bachelor Degree or Higher
Ability to get a BA 1,2,3,6 34% n=343
Ability to get a BA 4 44% n=203
Ability to get a BA 5 58% n=706
Avail. of Assistance 1,2,3,4 42% n=202
Avail. of Assistance 5,6 23% n=141
Dist. From Work 1,2,3,4,6 56% n=124
Dist. From Work 5 28% n=79
Avail. of Fin. Aid 1,2,3,4 69% n=320
Avail. of Fin. Aid 5,6 46% n=386
Job Requirements 1,2,3,4 76% n=217
Job Requirements 5,6 56% n=103
2
Total
62%
1,793
% of Students Who Would Continue at the College
Ability to get a BA 1 36% N=133
Ability to get a BA 2 21% N=70
Ability to get a BA 3 46% N=242
Ability to get a BA 4,6 57% n=355
Ability to get a BA 5 76% n=993
Ability to Earn Degree 1,2,3,4 19% n=59
Ability to Earn Degree 5 49% n=74
Convenient Location 1,2,3,4,6 65% n=248
Convenient Location 5 78% n=745
Academic Challenge 1,2,3,4,6 70% n=228
Academic Challenge 5 81% n=517
3
Total
61%
1,628
% of Students Majoring in Business or Legal Studies
Job Placement 1 77% n=196
Job Placement 2,3 68% n=397
Job Placement 4,6 60% n=436
Job Placement 5 51% n=599
Academic Challenge 1,2 47% n=34
Academic Challenge 3,4,5 83% n=162
Ability to Get a BA 1 21% n=28
Ability to Get a BA 2,6 46% n=28
Ability to Get a BA 3,4,5 74% n=341
Ability to Get a BA 1,2,3,4,6 36% n=182
Ability to Get a BA 5 58% n=417

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Chart 2 presents the results of a factor analysis. This complex analytical techniques allows for a series of items to be represented by a several multidimensional concepts. Each concept, or in statistical jargon -- factor score -- allows for an examination of key issues by key constituencies -- in this instance the three previously defined market segments. An important piece of information: each factor score is standardized and therefore has a conceptual mean of zero. When reading the chart, those scores falling below the mean of zero suggests that the market segment group places less importance on this issue. Conversely, if the scores fall above the mean of zero, the market segment group places more importance on the issue. When differences between two groups become large enough, the items are marked as being statistically significant. In simple terms, this means that the differences between the two groups should be looked at closely.

A factor analysis performed on the 22 important characteristics revealed four underlying concepts: customer service, academic offerings, financial aspects and location. The customer service factor was the most robust and, hence, the most meaningful. Customer service is significantly more important to students who would continue at the same institution for their bachelor degree and also to business majors. The array of Academic Offerings was also consider to be of more importance for those students who would continue on for a bachelor degree versus those who would not stay at the college.

Financial Aspects were of greater concern to students who did not want to pursue a bachelor degree and to those not in business majors. Location was a differentiating factor only for non-business majors as compared to those studying business or legal studies.

Quality Assessment of the Institution

Based on a rationale that students who are more satisfied with their current educational situation are more likely to want to continue their education and do so at the same institution, survey respondents were asked to evaluate the quality of their present institution on the same 22 items. Ratings were based on a scale of 1 to 5 where 1=**Poor Quality** and 5=**Excellent Quality**.

The overall highest quality rating was assigned to Convenient Location (4.65), followed by Ability to Earn a Degree (4.48), Distance from Home (4.42) and Quality of Instructors (4.34). This is a positive message for the institution as these items ranked among those most important to students in their decision to continue their education.

Chart 3 presents two CHAID analyses performed on these 22 quality assessments. The first CHAID analysis helps predict which students would remain to obtain a bachelor degree. At the onset, 62% of the population surveyed stated that they would continue at the college. This proportion increases to 74% when the Quality of the Academic Challenge was rated excellent. A vast majority of these students (77%) would continue at the college if it Assisted Them in Getting a Bachelor Degree.

The second CHAID analysis presented in Chart 3 pays attention to the response patterns of business and legal studies majors. The issue of convenience come to the forefront. Overall 60% of the total sample is enrolled in business or legal studies majors. This percentage increases to 66% when the quality of the Convenient Location of the college is rated excellent. This percentage is further enhances (71%) when Course Offerings are rated good. High ratings for Course Schedules further expands the concentration of business majors. It is clear from this CHAID analysis that a vast majority of students evaluate the institution positively -- just as important, a vast majority of these students are business and legal studies majors.

Chart 4 displays the results of a factor analysis performed on these 22 quality assessments. The factor model was significant and four relevant factors emerged. Interestingly enough, the factor clusters that emerged has the same traits as those seen in the important characteristics factor analysis. The Customer Service factor rates significantly higher in quality by students who would remain there for their bachelor degree as well as by students majoring in business or legal studies. Academic Offerings

Chart 2

Factor Analysis: Important Characteristics

Customer Service

Academic Challenge
Commitment to Students
Campus Director
Availability of Assistance

Academic Offerings

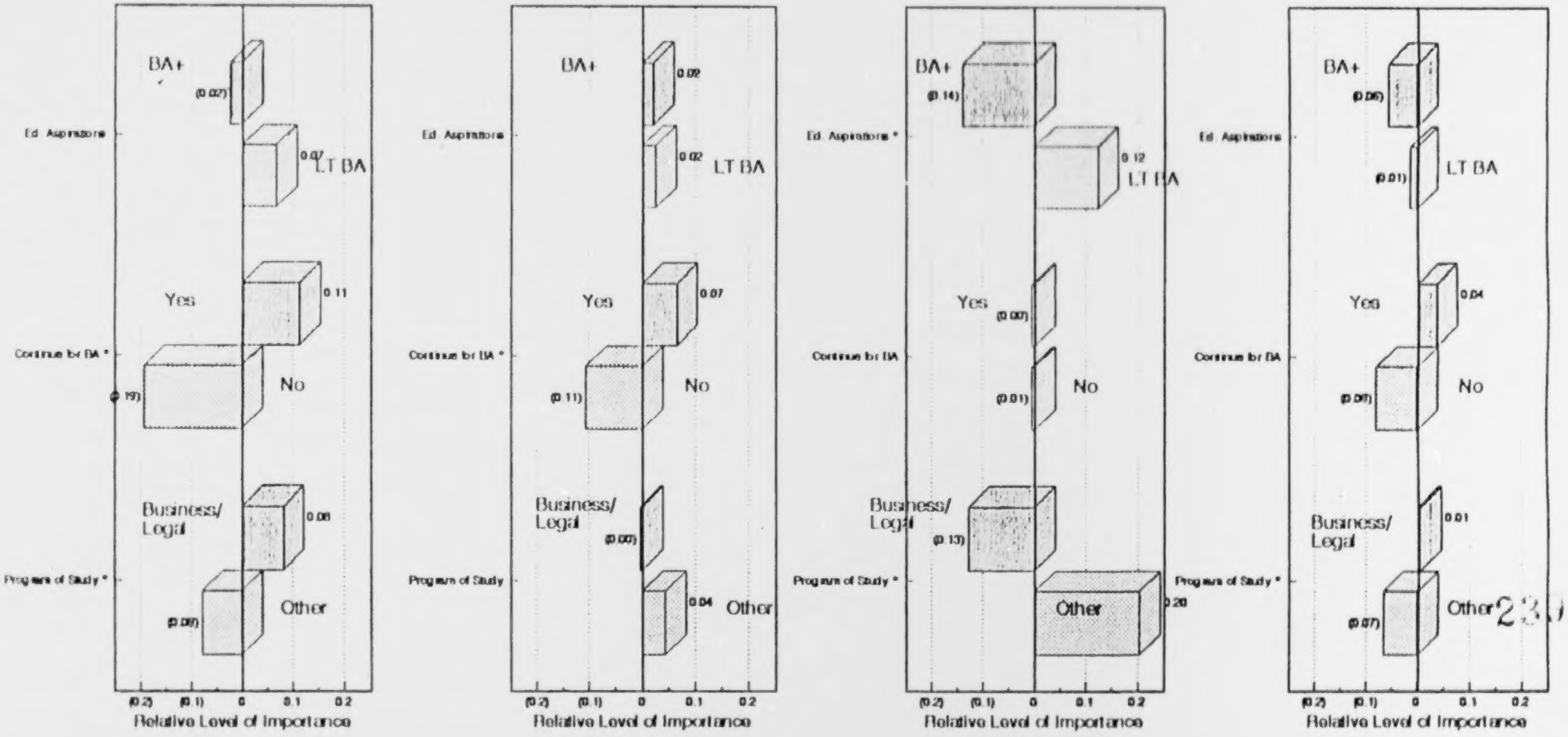
Course Offerings
Program Offerings
Quality of Instructors
Course Schedule

Financial Aspects

Job Placement
Job Requirements
Availability of Financial Aid

Location

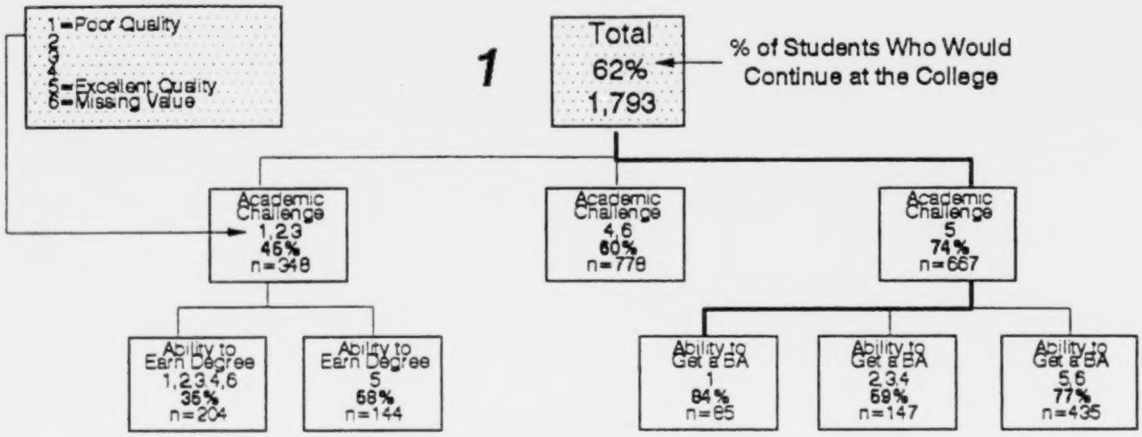
Distance From Home
Convenient Location
Distance From Work



* Indicates significant at p < .050.

Chart 3

CHAID Analysis: Quality Assessment


1 = Poor Quality
2
3
4
5 = Excellent Quality
6 = Missing Value
1
Total
62%
1,793
% of Students Who Would Continue at the College
Academic Challenge 1,2,3 45% n=348
Academic Challenge 4,6 60% n=778
Academic Challenge 5 74% n=667
Ability to Earn Degree 1,2,3,4,6 35% n=204
Ability to Earn Degree 5 58% n=144
Ability to Get a BA 1 64% n=65
Ability to Get a BA 2,3,4 69% n=147
Ability to Get a BA 5,6 77% n=435

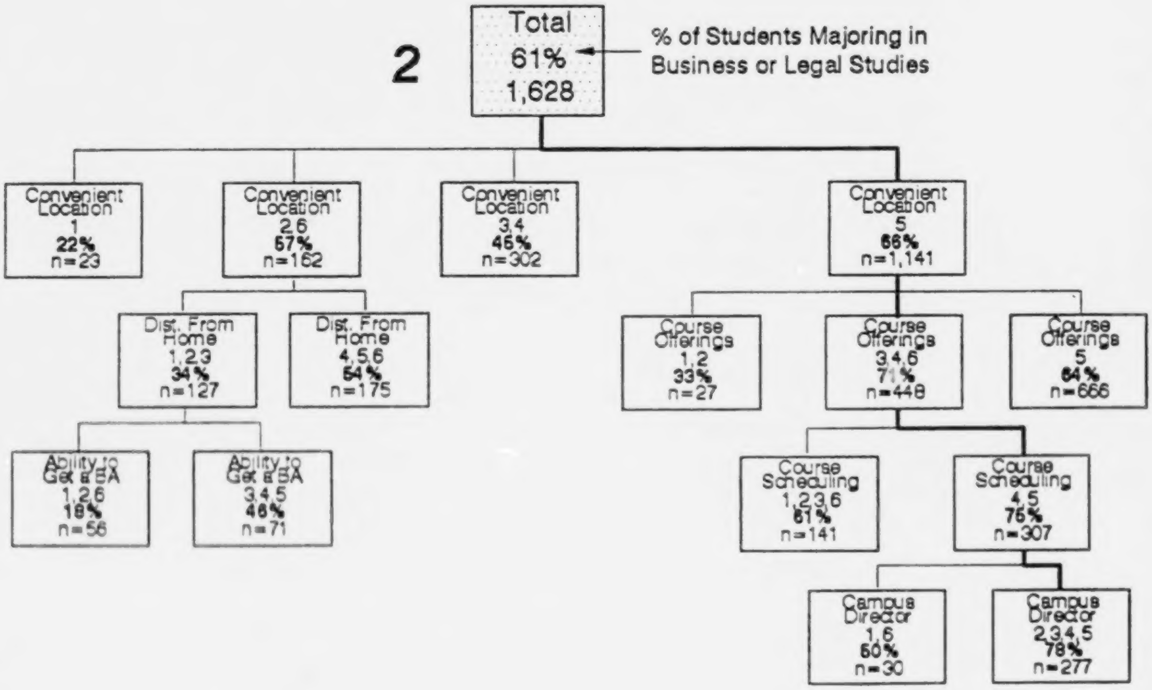

2
Total
61%
1,628
% of Students Majoring in Business or Legal Studies
Convenient Location 1 22% n=23
Convenient Location 2,6 57% n=162
Convenient Location 3,4 46% n=302
Convenient Location 5 66% n=1,141
Dist. From Home 1,2,3 34% n=127
Dist. From Home 4,5,6 54% n=175
Ability to Get a BA 1,2,6 18% n=56
Ability to Get a BA 3,4,5 46% n=71
Course Offerings 1,2 33% n=27
Course Offerings 3,4,6 71% n=448
Course Offerings 5 64% n=666
Course Scheduling 1,2,3,6 61% n=141
Course Scheduling 4,5 75% n=307
Campus Director 1,6 50% n=30
Campus Director 2,3,4,5 78% n=277

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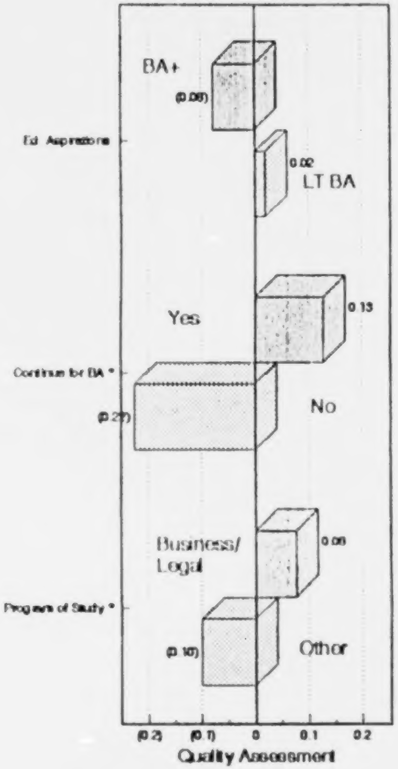
Chart 4

Factor Analysis: Quality Assessment

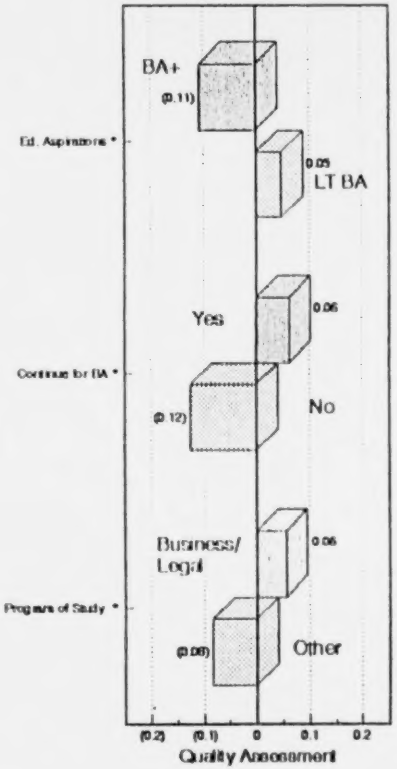
Customer Service

Campus Director
Commitment to Students
Availability of Assistance
Academic Challenge



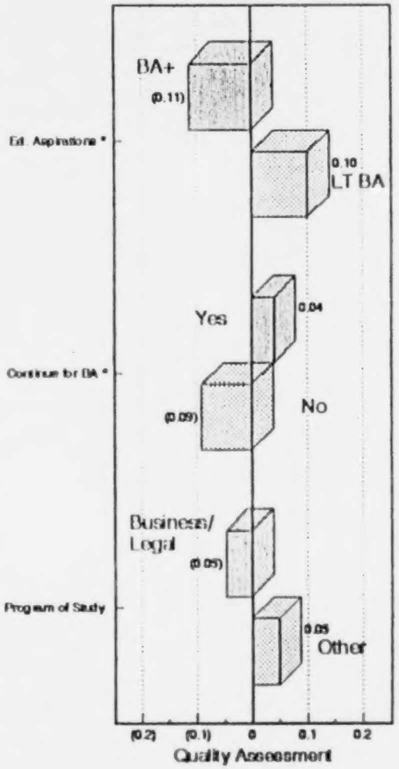
Academic Offerings

Course Offerings
Course Schedule
Program Offerings
Value for the Price



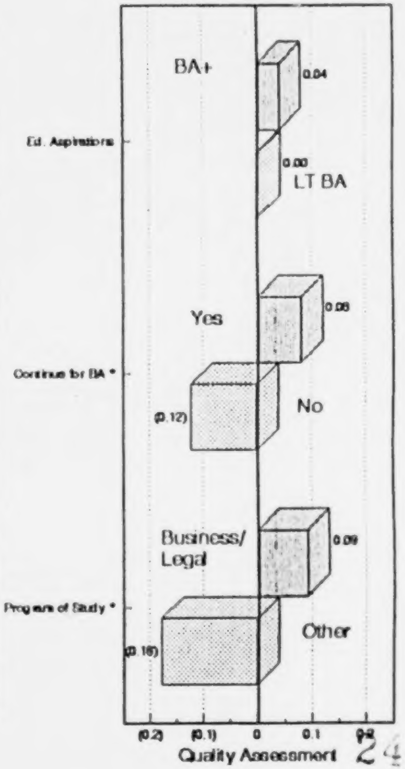
Financial Aspects

Job Requirements
Job Placement
Availability of Financial Aid



Location

Distance From Home
Convenient Location
Distance From Work



* Indicates significant at $p < .050$.

received differing assessments by all three groups. Those who were interested in continuing their degrees to the bachelor level were less impressed with the quality of this institutional characteristic while those who would stay at the college and business majors appraised it higher. Financial benefits at the college rate lower for students who do not want to complete a bachelor degree. These benefits were assessed higher by students who would remain at the same institution. The Location factor was a high quality issue for those who would continue there and for those majoring in business.

Conclusion

The career focus of this institution has been a major factor in the college's recruitment success. By observing trends and shifts in both business and industry, course offerings are evaluated and modified to help insure that the educational courses offered to students are not obsolete. However, the needs and wants of the students as well as changing market demands, compel the institution to be innovative. This institution aspires to have its graduates not only be competent in their respective career fields, but also to have a more well-rounded educational background that stresses critical thinking and communication skills. To implement a bachelor degree option would increase the marketability of both the students and the institution.

The purpose of this study was to establish quantitatively the level of interest current students have in pursuing a bachelor degree. Similarly, this analysis assessed the students' likelihood of remaining at the same institution to pursue that goal. The results here were positive for the college - nearly half of those surveyed had educational aspirations higher than an associate degree and of those, nearly 70% would remain at this institution to complete their degree. Notably, students identified as being among those most likely to benefit from the *two-plus-two* option appear to be more concerned with the overall academic experience afforded to them by the college. The learning process as important to this group as getting a job. They are less concerned with financial and academic assistance than they are with academic challenge and quality of the college's offerings.

New Standards For Accreditation: Implications for Institutional Research

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In January, 1992, the New England Association of Schools and Colleges issued new standards for accreditation. The primary objectives of this paper are to briefly describe the revised standards, to highlight major revisions in the new standards, and to discuss the implications that these standards may have for institutional researchers.

There are two themes that seem to pervade throughout the eleven revised standards: *Institutional Integrity* and *Institutional Effectiveness*. There is a new standard entitled *Integrity*. This standard replaces the former *Ethical Practices Standard,* which was not very well defined. In addition to having the new standard which specifically addresses issues of institutional integrity; many of the other standards include components which focus upon appropriate ethical issues. For example, in the *Student Services Standard;* there is an expectation that the institution has "an appropriate set of clearly stated ethical standards to guide student service activities" and that the policies are "fairly and consistently administered." [1]

Institutional effectiveness is the second theme which is addressed in the revised standards. Each of the eleven standards includes a component which addresses the need to monitor the effectiveness of the particular activity and to use the information gathered to facilitate improvement. In effect, an explicit assessment component has been added to the accreditation process. For example, in the *Programs and Instructions Standard* the following language is found:

> Graduates successfully completing an undergraduate program demonstrate competence in written and oral communications in English; the ability for scientific and quantitative reasoning, for critical analysis and logical thinking; and the capability for continuing learning. They also demonstrate knowledge and understanding of scientific, historical, and social phenomena, and a knowledge and appreciation of the aesthetic and ethical dimensions of humankind. In addition, graduates demonstrate an in-depth understanding of an area of knowledge or practice and of its interrelatedness with other areas. (NEASC, *Standards for Accreditation,* 1992, p. 11).

Given the pervasiveness of the effectiveness theme throughout the standards, the Commission issued a separate policy statement on institutional effectiveness (refer to Appendix A). It is interesting to note that the Commission does not provide any specific guidelines or methodologies to measure effectiveness; rather it is left to the individual institution's discretion to develop appropriate measures, both qualitative and quantitative. There is, however, an expectation that over time an institution's assessment effort will become "comprehensive, systematic, integrative, and organic".[2]

While the revised standards are not fundamentally different than the previous ones, there are some revisions that may cause institutions to question the appropriateness of information they currently collect, to identity additional information that they should be collecting and to analyze the ways in which the information is used. Table 1 highlights the two sets of standards and the revisions that have occurred.

Table 1

Old Standards	Revised Standards	Changes
1. Mission & Objectives	1. Mission & Purposes	No substantive changes Assessment component included
2. Evaluation & Planning	2. Planning & Evaluation	Greater emphasis on assessment Assessment component included
3. Organization & Governance	3. Organization & Governance	Assessment component included
4. Programs & Instruction	4. Programs & Instruction	Greatly expanded Assessment component included
5. Special Activities		Standard eliminated
6. Faculty	5. Faculty	Greatly expanded Assessment component included
7. Student Services	6. Student Services	Major revisions Assessment component included
8. Library & Learning Resources	7. Library & Information Resources	Major revisions Assessment component included
9. Physical Facilities	8. Physical Resources	No substantive changes Evaluation component included
10. Financial Resources	9. Financial Resources	No substantive changes Assessment component included
11. Publications & Advertising	10. Public Disclosure	New Standard Assessment component included
12. Ethical Practices	11. Integrity	Major revisions Assessment component included

Standard One: Mission and Purposes

This standard is not fundamentally different than the previous one. In essence, it affirms the importance of having a well-defined and realistic mission that is generally well understood, accepted by the community and periodically re-evaluated. While the old standard indicated that an institution should periodically re-evaluate its mission, the new standard differs slightly in so far as it states that the re-evaluation results should be used regularly "in planning and resource allocation to enhance its efforts to achieve institutional purposes" (NEASC, *Standards for Accreditation*, 1992, p. 3).

Standard Two: Planning and Evaluation

This standard is not markedly different. While, there is the continued expectation that institutional planning and evaluation are systematic and broad based, a greater emphasis is placed on the linkages between planning and evaluation. Moreover, major importance is placed on assessment. There are three sections of the standard that are of particular interest:

1. An institution needs to demonstrate through evaluation that it is achieving its mission and objectives.
2. An institution systematically applies information obtained through it evaluation activities to inform institutional planning.
3. An institution determines the effectiveness of its planning and evaluation activities on an ongoing basis. Results are used to revise and enhance the institution's implementation of its purposes. (NEASC, *Standards for Accreditation*, 1992, p. 4)

Standard Three: Organization and Governance

This standard is very similar to the previous standard. However, it does include a new assessment component. There is the expectation that "the institution periodically evaluates the effectiveness of its system of governance using the results for its improvement" (NEASC, *Standards for Accreditation*, 1992, p. 6).

Standard Four: Programs and Instruction

This standard has been greatly expanded. The following areas are addressed in this standard: undergraduate and graduate curriculum, assessment, academic evaluation and planning, admissions, transfer of credit, instruction, scholarship, and research.

The effectiveness component of this standard requires that academic planning and evaluation be conducted in order to determine institutional success and to facilitate improvement. Moreover, there is a requirement that the institution periodically review its degree programs and that the evaluation include an assessment of their effectiveness and continued needs (NEASC, *Standards for Accreditation*, 1992, p. 8).

There is a significant amount of assessment language in this standard. In addition to the section on the demonstrated competencies of undergraduates previously quoted, there is an assessment requirement for graduate programs. It states the following:

> Students who successfully complete a graduate program demonstrate that they have acquired the knowledge and developed the skills that are identified as the program's objectives (NEASC, *Standards for Accreditation*, 1992, p. 13).

There is a further requirement that "the effectiveness of instruction is periodically and systematically assessed using adequate and reliable procedures" (NEASC, *Standards for Accreditation*, 1992, p. 14).

Standard Five: Faculty

The *Faculty Standard* has been expanded and is more inclusive than the previous standard. The revised standard includes references to adjunct faculty, teaching assistants, and academic staff. In addition, the standard states that if graduate teaching assistants are used that it is the institution's responsibility to "carefully select, train, supervise, and evaluate them" (NEASC, *Standards for Accreditation*, 1992, p. 14).

This standard stipulates that faculty should be effective in carrying out their responsibilities and that the institution must employ effective procedures for regular evaluation (NEASC, *Standards for Accreditation*, 1992, p. 18).

Standard Six: Student Services

This standard has been rewritten with an emphasis placed on the co-curricular importance of student services. It requires that services and facilities be adequate and accessible to all. Like the previously discussed standards, this standard has an effectiveness component. It requires that the institution evaluate on a systematic basis "whether the co-curricular goals and needs of students are being met." Moreover, the information obtained through this evaluation is to be used to revise the goals (NEASC, *Standards for Accreditation*, 1992, p. 21).

Standard Seven: Library and Information Resources

When this standard was revised, the emphasis was changed to reflect the importance of access and utilization of information as compared to ownership of information. This standard specifies that the institution should "regularly and systematically evaluate the adequacy and utilization of its library and information resources, and to use the results of the data to improve and increase the effectiveness of these services" (NEASC, *Standards for Accreditation*, 1992, p. 23).

Standard Eight: Physical Resources

This revised standard is not fundamentally different than its predecessor. It does place a greater emphasis on the importance of environmental and ecological concerns. In addition, it has an evaluation component. There is the expectation that physical resource planning is conducted and that it is linked to academic, student services, and financial planning. Moreover, there is the expectation that this planning will lead to the identification of deferred maintenance needs and plans for resolution (NEASC, *Standards for Accreditation*, 1992, p. 23).

Standard Nine: Financial Resources

This standard has not been changed substantially. A new section on fundraising was added. Essentially it states that fundraising should be directed toward the achievement of institutional purposes and that there should be clear policies that guide these efforts. In addition, this standard requires that an institution have a plan to address issues raised by the existence of an operating deficit and that it have in place appropriate internal mechanisms to evaluate its financial management (NEASC, *Standards for Accreditation*, 1992, pp. 24 & 26).

Standard Ten: Public Disclosure

This standard replaces the *Publications and Advertising Standard*. The basic thrust is similar to the previous standard. There is the general expectation that the information the institution provides is accurate and that there is a positive responsiveness to requests for information. There is an effectiveness component associated with this standard. An institution is required to conduct periodic reviews of its publications to ensure that they are accurate and current (NEASC, *Standards for Accreditation*, 1992, p. 28).

Standard Eleven: Integrity

This standard was previously entitled *Ethical Practices*. The standard affirms the expectation that there is a need for ethical behavior in all university activities and that the institution's ethics are codified. In addition, it is stipulated that "the institution periodically assesses the effectiveness of its ethical policies and procedures and demonstrates that mechanisms exist for the effective implementation of its principles " (NEASC, *Standards for Accreditation*, 1992, p. 30).

Implications

For those institutions which regularly incorporate assessment into their activities, many of the requirements for re-accreditation will not require modifications in their standard operating procedures. In all likelihood, these institutions will already have in place many of the evaluation components. They will have determined their objectives and how to measure whether or not they are being attained. However, at other institutions, the story may be quite different. For some, the first step will be to identify and document what policies, procedures, systems, and evaluation components are currently in place to measure effectiveness. One may find that some institutions have procedures in place for several areas and are only deficient in a few. For example, it is quite possible that some institutions are doing evaluations in the areas of instruction and finances, but are not doing anything to assess student services.

Given the extent of the effectiveness measures that will be required, there is ample potential for involvement on the part of institutional research staff. This involvement could include the development of appropriate measures to assess effectiveness, the systematic collection of appropriate data, and the monitoring of the use of the information and its impact on facilitating change.

For those interested in examining the standards in further detail, copies of the *Standards for Accreditation* are available from the New England Association of Schools and Colleges.[3]

Footnotes

[1] New England Association of Schools and Colleges, Commission on Institutions of Higher Education. *Standards for Accreditation*, 1992, p. 21.

[2] New England Association of Schools and Colleges, Commission on Institutions of Higher Education. *Policy Statement on Institutional Effectiveness*, January 22, 1992.

[3] The address for NEASC is as follows: The Sandborn House, 15 High Street, Winchester, MA 01890, (617) 729-6762.

APPENDIX A

NEW ENGLAND ASSOCIATION OF SCHOOLS & COLLEGES, INC.
COMMISSION ON INSTITUTIONS OF HIGHER EDUCATION

POLICY STATEMENT ON INSTITUTIONAL EFFECTIVENESS

In revising its standards for accreditation, the Commission on Institutions of Higher Education has reaffirmed the importance of each institution measuring its effectiveness. An institution's efforts and ability to assess its effectiveness and use the obtained information for its improvement are important indicators of institutional quality. The Commission, through its evaluative processes, will appraise these quality indicators. Just as assessment is now a pervasive theme throughout the revised standards, so too should it be a theme in all comprehensive self-studies.

The Commission views such assessment as a means of enhancing institutional effectiveness. The assessment process requires the gathering and analysis of evidence of congruence between an institution's stated mission, purposes, and objectives and the actual outcomes of its programs and activities. In order to inform its planning, decision-making, and resource allocation, an institution needs to determine how well and in what ways it is accomplishing its mission and purposes. Moreover, the institution needs documentary evidence to support assertions of quality made in its self-study and in its communications with its constituencies.

The Commission expects each institution, as part of its dedication to institutional improvement, to monitor its effectiveness in achieving its mission and purposes. Accordingly, the institution collects and analyzes relevant data and uses this information in the institutional planning process as a basis for sustaining quality and self-improvement. Thus, assessment functions as a tool for the encouragement of such improvement as well as a basis for quality assurance.

There is no one best way to assess institutional effectiveness, and the Commission prescribes no formula that an institution must use for measuring or demonstrating its effectiveness. Assessment efforts will vary among different types of institutions as well as among institutions of the same type. Successful assessment efforts are compatible with the institution's mission and its available resources.

Assessment is not a one-time activity; rather, it is evolutionary, ongoing, and incremental. The Commission realizes that an institution initially engaging in assessment will be likely to do so on a limited basis. However, it expects that in due time its assessment efforts will be more comprehensive, systematic, integrative, and organic. Regardless of their scope, these efforts will be both qualitative and quantitative. Assessment does not require standardized or even professionally developed instruments or complicated methods of statistical analysis.

While assessment is an overall institutional concern, as reflected in the various standards for accreditation, its primary focus is the teaching-learning experience. To the greatest extent possible, therefore, the institution should describe explicit achievements expected of its students and adopt reliable procedures for assessing those achievements.

Ultimately, assessment and accreditation share the common goal of enabling the institution to reach its fullest academic potential by providing the highest quality education possible. In pursuing that goal, institutional autonomy should be preserved, innovation encouraged, and the distinct character of each institution recognized and honored.

January 22, 1992

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How Valid is Self-Reported Financial Aid Information?

Dale Trusheim
Associate Director, Office of Institutional Research and Planning
University of Delaware

Measurement error in survey research has concerned social scientists for decades. A strong methodological literature exists which covers both the validity of respondents' reports of factual material, and biases which may result from measurement error (see, for example, Parry and Crossley, 1950; Bielby, Hauser, and Featherman, 1977; Alwin, 1977; Jencks, 1979; Corcoran, 1980; and Looker, 1989).

Although many studies have found that survey respondents can be reasonably accurate in reporting socioeconomic data such as parental income and occupation (Eckhardt and Wenger, 1975; Taylor, 1976; Looker, 1989), other researchers have found survey respondents to be quite inaccurate in reporting other types of factual information. Using a national sample of high school students from the National Longitudinal Study, Rosenbaum (1980) found a correlation between students' perception of track placement and actual track of only 0.60. Traugott and Katosh (1979) found large amounts of misreporting of survey respondents' political behavior. Wyner (1980) investigated the reliability of respondents' self-reports of arrests and found a correlation of 0.66 between reported and actual arrests. Weaver and Swanson (1974) also found wide variations in the ability of respondents to report such significant information as date of birth and salary.

Unfortunately, despite substantial evidence of the invalidity of survey responses, and despite a considerable array of textbook cautions about non-sampling error (Bradburn and Sudman, 1988; Fowler, 1984), the usual strategy adopted by researchers seems to be "indifference" (Jencks et al., 1972).

This paper compares the accuracy of college students' self-reported information about financial aid awards with actual data on the types and amounts of these awards. Data are obtained from a doctoral level, public university and a national sample of students attending doctoral level universities. Many prior studies of the accuracy of respondents' reports of factual material are taken from adult samples and relate to political or socioeconomic data (Looker, 1989). The data reported in this study are from a sample of much younger men and women in higher education, and thus provide a somewhat different setting for the study of survey validity. In addition, American colleges and universities may use survey data about financial aid levels for descriptive or policy purposes (see, for example, Wilson, 1991). Thus, the validity of the data being used for such deliberations is an important consideration. As well as assessing the validity of students' self-reports, this paper also briefly discusses policy implications for colleges and universities which may rely on flawed survey data.

Sample and Methods

The primary sample for this study consists of 1,114 first-time freshmen who enrolled at a large, Eastern university in fall, 1987. Each of the students completed the UCLA Cooperative Institutional Research Program's (CIRP) Student Information Form (SIF) during the New Student Orientation sessions scheduled at the university in late June or July preceding their September matriculation. Although actual matriculation does not occur until the beginning of the fall semester, these freshmen received official, written notification of their financial aid awards from the university between March and early June, well in advance of the summer orientation sessions. Thus, the freshmen in this sample were all informed and could be expected to have been knowledgeable about both the receipt and amounts of financial aid.

The SIF freshman survey has been used for over two decades to monitor trends in characteristics of American freshmen. The survey provides information about students' high school activities, educational aspirations, college application patterns, general attitudes, financial aid data, and other items. In 1987, the survey was administered by over 500 colleges and universities, and various data from the survey have been utilized by institutional research offices and others who are interested in policy analysis and educational research.

The SIF form requests student responses to 12 different sources of financial aid. For this study, six types of financial aid were selected which cover the main categories of assistance: Pell grants, state scholarships or grants, college grants or scholarships, other private grants, College Work-Study aid, and Federal Guaranteed Student Loans (GSL). In these analyses, the three grant-related financial aid sources were combined: "state," "college," and "other private" grants or scholarships. Students could choose one of seven categories to indicate whether financial aid was received: 1) No aid, 2) $1-499, 3) $500-999, 4) $1000-1499, 5) $1500-1999, 6) $2000-3000, and 7) more than $3000. The number of aid categories was also collapsed from 7 to 4: 1) No aid, 2) $1-999, 3) $1000-1999, and 4) $2000 or more. Students' reports of their SAT-Verbal and Math scores were also extracted from the survey data file.

Next, the correct values for financial aid data and SAT scores were extracted from the Financial Aid data files and the Student Records System at the university. The specific dollar amounts from the financial aid files were re-coded into the same four categories as the CIRP survey.

Results

The first step in the analysis was a bivariate cross-tabulation of whether students correctly reported receipt of any financial aid. Table 1 presents results for the four types of aid awards. The majority of students correctly reported not receiving any of the four types of aid. From 1.0 to 8.2 percent of students who did not receive aid, however, reported that they would receive financial aid.

Table 1

Cross-tabulation of Students' Reports of Receiving Any Financial Aid
with Actual Information

A. Was Pell Grant Received?

Self-Report	Actual No	 Yes	 Total
No	960 (97.8)	17 (28.8)	977
Yes	22 (2.2)	42 (71.2)	64
Total	982 (94.3)	59 (5.7)	1041

B. Was College Work-Study Received?

Self-Report	Actual		
	No	Yes	Total
No	952 (99.0)	41 (48.8)	993
Yes	10 (1.0)	43 (51.2)	53
Total	962 (91.9)	84 (8.1)	1046

Note: Sample includes 1,114 first-time freshmen in fall, 1987 who completed UCLA/CIRP Student Information Form.

C. Were Grants and Scholarships Received?

Self-Report	Actual		
	No	Yes	Total
No	770 (93.4)	76 (41.3)	846
Yes	54 (6.6)	108 (58.7)	162
Total	824 (81.7)	184 (18.3)	1008

D. Was Guaranteed Student Loan (G.S.L.) Received?

Self-Report	Actual		
	No	Yes	Total
No	774 (91.8)	58 (27.5)	832
Yes	69 (8.2)	153 (72.5)	222
Total	843 (80.0)	211 (20.0)	1054

Among those students who did actually receive aid, the errors were much larger. For example, almost as many students who received Work Study funds reported no (N=41) as reported yes (N=43). Seventy-six of the 184 recipients (42.3%) of grant funds reported they did not receive a grant or scholarship. And approximately 28 percent of the Pell grant and GSL aid recipients also indicated on the survey that they would receive none of these funds.

Since these self-reports and actual aid values were coded into four categories, I next computed a univariate chi-square which tested the distribution of students' self-reports against the distribution of true values. Table 2 shows that in three of the four aid categories the observed percentages deviate substantially from the true or expected frequencies. Particularly large discrepancies are observed in students' knowledge of Work Study, GSL funds, and grants or scholarships.

Table 2

Comparison of Self-Reported Distribution to
Actual Distribution of Financial Aid Awards

	Pell Grants			Scholarships and Grants		
Amount	Self-Reported	Expected	Difference	Self-Reported	Expected	Difference
None	977	978.54	-1.54	846	802.37	43.63
$1 - 999	40	30.19	9.81	73	53.42	19.58
$1000 - 1999	18	22.90	-4.90	39	46.37	-7.37
$2000 - +	6	9.37	-3.37	50	105.84	-55.84
	$X^2 = 5.452$, 3df, Sig. .142			$X^2 = 40.18$, 3df, Sig. .000		

	College Work/Study			GSL		
Amount	Self-Reported	Expected	Difference	Self-Reported	Expected	Difference
None	993	961.19	31.81	832	846.36	-14.36
$1 - 999	36	4.19	31.81	31	17.92	13.08
$1000 - 1999	16	79.58	-63.58	118	36.89	81.11
$2000 - +	1	1.05	-.05	73	152.83	-79.83
	$X^2 = 293.477$, 3df, Sig. .000			$X^2 = 229.83$, 3df, Sig. .000		

Note: Same sample as Table 1.

Another way to view the relationship between reported and true scores is that if student self-reports about financial aid accurately reflect true values, there should be a strong correlation between the distribution of students' responses and the actual values. In essence, the correlations can be interpreted as validity coefficients: the squared correlation coefficients show the proportion of total variance in actual financial aid that is attributable to self-reports, and the proportion that is error variance.

Validity Coefficients

The correlation coefficients between self-reported and actual financial aid were very low. Table 3 presents the Spearman correlation coefficients for the four different types of financial aid. The correlations range from a high of 0.67 for Pell grants, to a low of 0.58 for all scholarships. This means that well over half of the variance in all self-reported financial aid information is error. Students are not likely to report accurately the types and amounts of financial aid that is supporting their postsecondary education.

Table 3

Validity of Self-Reported Financial Aid Awards

Self-Report Variables	Spearman Validity Coefficients	Error Variance(%)[1]	N
A. Grants			
1. Pell Grants	.67	55.1	1041
2. Scholarship or Grants	.58	66.4	1008
B. College Work-Study	.62	61.6	1046
C. Loans			
1. Federal Guaranteed Student Loan (GSL)	.63	60.3	1054
	Pearson Coefficient[2]		
D. Other			
1. SAT - Verbal	.93	13.5	962
2. SAT - Math	.94	11.6	962

Note: Same Sample as Table 1.

[1] Calculated as $(1-(\text{Spearman R})^2) * 100$

[2] Pearson Correlation Coefficient

Note also that these validity coefficients might well overstate the relationship between self-reports and actual aid. The correlations in Table 3 are computed from ranges which should be easier for students to identify than actual values. Were students asked to report specific amounts of aid, it is likely that their errors would increase and the correlations would decline.

Students do remember their SAT scores, however, even when SAT scores are not coded into ranges. Table 3 shows that the Pearson correlation coefficient for SAT-Verbal is 0.93; it is 0.94 for SAT-Math. These results are consistent with Educational Testing Service research which shows that student self-reports of SAT scores are valid measures for research analyses (Ramist et al., 1984).

Measurement error

Demonstrating low validity coefficients does not reveal the range of misreported data. Table 4 presents further information on the extent of response errors. The column of true negatives shows the number of students who correctly reported that they received no financial aid from the various types of awards. In two of the categories, at least 91 percent of the students were able to correctly recognize that they did not receive an award. In scholarships and the GSL categories, however, only three-quarters of the students were able to correctly state that they did not receive a scholarship/grant award or a Guaranteed Student Loan.

Table 4

Accuracy of Students' Reports of Financial Aid Awards and Amounts

	True Negatives		True Positives		False Negatives		False Positives		Total
	N	%	N	%	N	%	N	%	
Pell Grants	960	92.2	23	2.2	17	1.6	41	3.9	1041
Scholarship/Grants	770	76.4	81	8.0	76	7.5	81	8.0	1008
Work Study	952	91.0	14	1.3	41	3.9	39	3.7	1046
Guaranteed Student Loan	774	73.4	70	6.6	58	5.5	152	14.4	1054

Note: True negatives are students who correctly reported they received no aid; true positives are students who indicated correctly the range of their financial aid award; false negatives are students who reported they received no aid but who did receive an award; and false positives are students who 1) incorrectly reported the amounts of their awards, or 2) did not receive an award but who reported they did.

Same sample as Table 1.

Of the remaining students, there is a substantial degree of inaccuracy in the ability to report how much aid was received even though there were only three ranges for students to choose from: $1-999, $1000-1999, and more than $2000. The percentage of true positives -- students who were able to correctly report the broad range of their financial aid awards -- ranged from 1 to 8 percent.

Compared to making a correct identification of the amount of aid received, students were almost equally likely to indicate they did not receive financial aid when, in fact, they did (false negatives). For example, almost 8 percent of the sample received some type of scholarship aid (state, college, or other private) but reported on the survey that they received no aid. Fifty-eight students (6 percent) in the sample said they did not use a GSL loan when they did.

The last column of Table 4 (false positives) further demonstrates the extent of misinformation about the aid awards students received. Comparison of the number of true positives (Col. 2) to the number of false positives (Col. 4) shows that with the exception of the scholarship/grant category, almost twice as many students made false statements about the awards they received than were able to make correct statements about them. Excluding students who correctly reported not receiving aid, freshmen at this university were much more likely to either deny getting some type of aid, or report the wrong amount than they are to give an accurate answer.

If college administrators and other officials relied on these survey data, how much would they be misled? To answer this question, I computed an average aid award for self-reported versus actual awards. Table 5 shows that students tend to underestimate the amounts of financial aid they receive. When data from the same students are compared, particularly large errors are found in student reports of scholarships/grants, Work Study, and Guaranteed Loan ranges from $350 to $600 dollars. The closest estimates are for Pell grants which show an underestimate of $185.

Table 5

Comparison of Average Financial Aid Award Amounts

Type of Aid	Self-reported Average Award Amount[1] $	Actual Average Award[1] $	N
Pell Grants	1013	1198	42
All Scholarship	2470	3093	108
Work Study	657	1010	43
Guaranteed Student Loan	1727	2196	153

Note: Sample restricted to only students who had self-report and actual data in each financial aid category.

[1] Computed by assigning midpoints to seven category ranges that reproduced the true (actual) averages. For example, for grants and scholarships the six midpoints were: $250, $360, $650, $1200, $1700, and $5300. Midpoints were then assigned to the corresponding categories for self-reported award amounts.

Replication with national data

Since the results in this study are based on a single cohort of freshmen at a large Eastern university, it is important to investigate whether these findings are replicated at other institutions. To accomplish this, I turned to the 1986-87 National Postsecondary Student Aid Study (NPSAS). The first NPSAS study was conducted during the 1986-87 academic year, one year earlier than the local freshman cohort analyzed in this study. The NPSAS data are the best national data available on how students and their families finance postsecondary education.

The 1986-87 data file contains information on approximately 60,000 students collected from institutional records, students and their parents. Students were surveyed by mail and telephone in the spring of 1987; and institutional data were collected in the fall of 1986 and updated in the summer of 1987.[1] This means that students had the opportunity to be completely aware of the financial aid they were receiving since the aid would have been already credited to their financial accounts in both the fall and spring terms.

The NPSAS survey data file allows researchers to compare institutional reports of financial aid awards to students' self-reports, but this information has not appeared in the literature. To the contrary, the 1986-87 NPSAS Data File User's Manual specifies that when computing aid categories, it is acceptable to substitute certain student reports of aid amounts if the institutional data are missing.[2]

For this analysis, a sample was drawn from the NPSAS data file of all students who attended either public or private doctoral level universities in the fall of 1986, and who had graduated from high school in 1985 or 1986. This permits almost a direct comparison to the CIRP data file, or first-time freshmen who enrolled in college in the fall of 1987. A total of 766 students attended public doctoral universities; 548 attended private institutions.

NPSAS collected detailed information from both students and the schools they attended about the categories and amounts of financial aid received by students. Over 73 different types of aid were identified on the institutional record forms.[3] The NPSAS Student Questionnaire, however, was not nearly as extensive as the institutional form. Students were only able to select from 17 types of aid. Nevertheless, it is possible to make direct comparisons between institutional reports and students' reports in three categories: Guaranteed Student Loans, Work Study, and State aid funds.

Because of the stratified sampling design utilized by the NPSAS survey, weights are required to generalize to the national level. However, the NPSAS weights make the sample size at least 200 times larger than it really is. For this reason, the public and private doctoral samples were adjusted back to the unweighted sample size by dividing by a constant.[4] This results in correctly weighted means and standard deviations.

Tables 6 and 7 show the percentage agreement (correctly reporting that type a of aid was not received or received) between student self-reports and institutional records for the three types of aid. Overall, the percentage agreement is high since most students correctly report that they did not, in fact, utilize a specific type of aid. However, if only students who actually received aid are considered, the percentage of correct agreement falls considerably. The percentage of correct agreement is between 68 and 82 percent for students at private, doctoral universities; it is 60 to 83 percent for students at public, doctoral universities.

A significant advantage of the NPSAS file is that students and institutions were asked to report exact dollar amounts of the aid received rather than the broad, dollar range responses of the CIRP survey. Therefore it is possible to compute Pearson correlations between actual scores (institutional reports) and self-reports (student survey responses).[5]

Table 8 shows that the Pearson correlations for both private and public doctoral universities are closely in line with the Spearman correlations reported earlier. The correlations for GSL and work study awards for freshmen attending public institutions are slightly higher than the single institution presented in this study, while the correlations for private school students are the same or lower. In either case, the fact remains that student self-reports only explain about half of the variance in actual (institutional) scores.

Table 6

Percentage Agreement About Receiving Financial Aid: Students Attending Public Doctoral Level Institutions

1. Guaranteed Student Loans

	Actual		
Self-Report	No	Yes	Total
No	571 (95.5)	28 (17.0)	599
Yes	27 (4.5)	137 (83.0)	164
Total	598 (78.4)	165 (21.6)	763

2. Work Study

	Actual		
Self-Report	No	Yes	Total
No	704 (99.1)	21 (39.6)	725
Yes	6 (0.9)	32 (60.4)	38
Total	710 (93.0)	53 (7.0)	763

3. State Aid

	Actual		
Self-Report	No	Yes	Total
No	623 (96.7)	45 (37.8)	668
Yes	21 (3.3)	74 (62.2)	95
Total	644 (84.4)	119 (15.6)	763

Note: Sample includes 763 students enrolled in 77 separate public, doctoral level universities in 1986-87. Students must have graduated from high school in 1985 or 1986.

Table 7

Percentage Agreement About Receiving Financial Aid: Students Attending Private Doctoral Level Institutions

1. Guaranteed Student Loans

Self-Report	Actual		
	No	Yes	Total
No	333	33	365
	(92.5)	(17.9)	
Yes	27	151	179
	(7.5)	(82.1)	
Total	360	184	544
	(66.2)	(33.8)	

2. Work Study

Self-Report	Actual		
	No	Yes	Total
No	397	39	436
	(95.7)	(30.2)	
Yes	18	90	108
	(4.3)	(69.8)	
Total	415	129	544
	(76.3)	(23.7)	

3. State Aid

Self-Report	Actual		
	No	Yes	Total
No	383	42	425
	(93.0)	(31.8)	
Yes	29	90	119
	(7.0)	(68.7)	
Total	412	132	544
	(75.7)	(24.3)	

Note: Sample includes 544 students enrolled in 64 private, doctoral level universities in 1986-87. Students must have graduated from high school in 1985 in 1986.

Table 8

Correlations Between Self-Reported and Actual Financial Aid Awards: NPSAS Freshmen Compared to Local Institution

	NPSAS Public[1]	NPSAS Private[2]	Local[3]
GSL	0.77 N = 137	0.46 N = 151	0.63 N = 1054
Work Study	0.70 N = 32	0.62 N = 90	0.62 N = 1046
State Aid	0.70 N = 74	0.75 N = 90	NA

[1] Pearson correlation. Same sample as Table 6.
[2] Pearson correlation. Same sample as Table 7.
[3] Spearman correlation coefficient. Taken from Table 3.

Discussion

Each year, UCLA/CIRP researchers report normative data annually about financial aid trends (see, for example, Astin, Green, Korn, and Schalit, 1987; Wilson, 1991). This study shows that students' self-reports of financial aid awards do not correspond very closely to actual data. Student self-reports generally underestimate the amount of financial aid received, whether it is loan, work, or grant. Campus administrators, therefore, would come to very different conclusions about both the types and amounts of student aid if they rely on survey data compared to actual data. Consequently, the findings in this study suggest that higher education researchers should use CIRP financial aid data cautiously.

An obvious question is why students are unable to report accurately information about how they and their families are financing Postsecondary education. We know that students from the local institution in this study had received written information regarding the types and amounts of financial aid they would be receiving for the 1987-88 academic year. Similarly, students from the NPSAS data file were surveyed about financial aid in the spring of their freshmen year and could be expected to know the types and amounts of financial aid they received.

Perhaps we should expect a group of freshmen to be misinformed about financial aid. None of the students in the study could have reached "emancipation" status -- applying for financial aid on their own as independents.[6] Perhaps the financial aid notices, bills and other information bypass freshmen and are handled strictly by parents. Consequently, students have no occasion to become knowledgeable about financial aid, since the main level of contact is between schools and parents rather than students.[7]

Another possible explanation for the discrepancy between self-reported and actual data is that students may be confused about financial aid terminology. With dozens of kinds of financial aid offered, students might simply mistake federal loan dollars or work study funds as scholarship or grant aid.

It is, of course, harder to speculate why students who do know the source of their aid award have such trouble correctly reporting the amounts of aid received. The CIRP questionnaire itself may shed some light on this question. The survey asks students if they have no, some, or major concern about financing their education. Of the 1,114 students in this study, only 82, or 7 percent reported a "major" concern about finance. The inaccurate student responses about type and amount of aid may therefore reflect students' lack of concern in the details of college finance. Regardless of the causes, however, the fact that the CIRP results were replicated with a national sample may give institutions that use this survey instrument pause to reconsider the accuracy of the financial aid section.

Endnotes

[1] National Center for Education Statistics, 1987 National Postsecondary Student Aid Study: Data File User's Manual, Washington, DC: WESTAT, Inc., p. 1-1.

[2] National Center for Education Statistics, 1987 National Postsecondary Student Aid Study: Data File User's Manual, Washington, D: WESTAT, Inc., Appendix F (Definition of Derived Variables).

[3] National Center for Education Statistics, 1987 National Postsecondary Student Aid Study: Student Financial Records Update Form, Washington, DC: WESTAT, Inc., pp. 9-12.

[4] The unweighted public sample was 766; the unweighted private sample was 548. The weighted public sample increased to 272,950 while the weighted private sample increased to 73,147. Dividing the public sample by 356.33 and the private sample by 133.48 returned the sample to the correct, unweighted N.

[5] Some readers may object to the use of correlations computed across institutions. It was not practical, however, to calculate correlations at the individual school level for the NPSAS data file. This is because only 4 out of 64 private institutions, and 4 out of 77 public institutions had at least 25 students represented. And since not all students within a school received a Guaranteed Student Loan, work study, or state aid, the usable sample sizes within schools were even smaller. The variances of the aid distributions were different between the public and private distributions, but fairly similar within each group as the data below show.

		Public		Private	
Aid Category		Mean	SD	Mean	SD
1.	GSL-Institutional	2023	630	2236	488
	GSL-Student Report	1906	667	2247	708
2.	Work Study-Institutional	1213	544	1144	346
	Work Study-Student Report	1169	614	1072	418
3.	State Aid-Institutional	973	810	2065	1298
	State Aid-Student Report	936	796	1937	1326

[6] Federal financial aid regulations require that students be away from home for at least three years before emancipation may be granted. All the students in this study from the NPSAS data file graduated from high school no more than two years prior to enrolling in college.

[7] I am indebted to an anonymous reviewer for adding this observation.

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Differences and Similarities Between Native and Transfer Students: CSU Survey of the Class of 1990

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Introduction

This study examines similarities and differences between native and transfer students. The two groups are described and compared on general characteristics, methods of financing education, assessments of programs and services at CSU, assessments of CSU's influence on skills and abilities, and on current employment status.

The data used to generate this report are derived from a survey of the graduating class of the 1989/90 academic year at Connecticut State University. CSU is a large, public, university system, with four campuses located throughout Connecticut, and an enrollment which consists primarily of in-state residents. During 1991, head count enrollments at CSU were over 37,000. The University awards 4-year degrees in a variety of disciplines, and conferred 3,848 undergraduate degrees in 1990/91.

Literature Review

Similar studies, conducted by Anderson & Campbell (1985), and Knight (1991), compared native and transfer students. However, these studies examined students transferring from 2-year colleges, and students transferring from 4-year colleges separately, while this study examines transfer students as a whole. In addition, neither study examined the student's assessment of the most recently attended university, and of the university's influence on the student. The studies focused on characteristics such as gender, age, ethnicity, academic performance, and on credit hours completed at the university.

Methodology

The survey was administered in questionnaire form, and was mailed out in November/December of 1990, to 3,750 students who had earned their undergraduate degree at CSU in the 1989/90 academic year.

The questionnaire was designed to assess various aspects of the student's experiences at CSU. This report will deal specifically with the similarities and differences between native and transfer students.

On the questionnaire, the student is asked whether he/she began CSU as a freshmen or as a transfer student. The student who indicated that he/she began as a freshmen will be referred to as a native student in this report, in order to clarify that the respondent began as a freshmen and has now graduated, and was not a freshmen at the time of the study.

It is important to note that this study did not control for those students who began at CSU as freshmen, transferred to another university, and then returned to CSU to graduate. These students are grouped with those who began as freshmen, and remained at CSU until graduation.

The results of this report include two forms of data; data which are self-reported (data from the questionnaires), and data from the student files, which are reported by the University. The data from the student files described in this report include gender, race, birthdate, and GPA.

Table 1 displays the individual campus response rates, as well as the number of native and transfer student respondents who graduated from each campus.

Table 1

Response Rate to the Survey of the Class of 1990

Number Surveyed, Number Responding, Percent Response Rate

	Central	Eastern	Southern	Western	CSU
Number Surveyed	1390	672	1186	502	3750
Number Responding	806	347	606	283	2043
Percent Responding	58%	52%	51%	56%	54%

Number and Percent of Native and Transfer Students Responding

	Central	Eastern	Southern	Western	CSU
Number of Native Students	361	128	328	146	963
Percent Native Students	46%	39%	55%	53%	48%
Number of Transfer Students	429	201	271	131	1039*
Percent Transfer Students	54%	61%	45%	47%	52%
Total Number of Students	790	329	599	277	2002
Total Percent of Students	100%	100%	100%	100%	100%

*Number of Transfer students at CSU includes 7 students with campus unknown.

As Table 1 indicates, the percentage of native and transfer student respondents was similar, 48% and 52% respectively. A larger percentage of the respondents from Central and Eastern were transfer students, while a larger percentage of respondents from Southern and Western were native students.

The chi square test of significance was used to analyze the responses of native and transfer students on the questionnaire. Thus, the term significance is used throughout the report to indicate a difference between the responses of native and transfer students which is greater than that which could be attributed to chance.

In addition, all percentage calculations presented in the report, except for the percentage responding, exclude missing data. The respondents who didn't answer a particular question or whose answer could not be interpreted, are not represented in the percentage breakdowns.

The following section is divided into four subsections which compare native and transfer students on various criteria.

General Characteristics of Native and Transfer Students

In order to create a profile of the respondents to the survey, gender, race, age, attendance pattern, overall GPA, and hours worked while attending the University were examined.

There was no significant difference between the native and transfer students sampled when compared on gender. Of the total sample, 60% of the respondents were female, and 40% were male. The ratio of men to women in this sample was similar to that of the population receiving undergraduate degrees at CSU during the same year, 58% women and 42% men.

Similarly, there was no significant difference between native and transfer students when compared on race. Of the entire sample, 95% of the respondents were White, 3% were Black, 1% were Hispanic, and the remaining 1% was a combination of other ethnicities. The proportion of whites in the sample is slightly higher than the proportion in the population of students who received their undergraduate degrees at CSU during the same year. In the population, 89% of the students were white. Thus whites are somewhat over-represented in the sample.

Table 2 compares native and transfer students on age, attendance pattern (full time, part time, or mixed), GPA, and reported hours worked while attending the University.

Table 2

Characteristics of Respondents

Age	Native	%	Transfer	%	Total
24 and under	686	71%	330	32%	1016
25 to 34	185	19%	377	36%	562
35 to 54	33	4%	235	23%	268
55 and over	59	6%	97	9%	156
Total	963	100%	1039	100%	2002

(difference significant at p<.001)

Attendance Pattern	Native	%	Transfer	%	Total
Full Time	860	91%	730	74%	1590
Part Time	22	2%	202	20%	224
Mixed	61	7%	62	6%	123
Total	943	100%	994	100%	1937

(difference significant at p<.001)

GPA	Native	%	Transfer	%	Total
A Average	65	7%	233	24%	298
B Average	628	67%	598	60%	1226
C Average	242	26%	160	16%	402
Total	935	100%	991	100%	1926

(difference significant at p<.001)

Hours Worked	Native	%	Transfer	%	Total
35 hrs or more	118	12%	312	30%	430
20 to 34 hrs wk	370	38%	333	32%	703
19 hrs or less	361	38%	249	24%	610
Not working then	111	12%	142	14%	253
Total	960	100%	1036	100%	1996

(difference significant at p<.001)

** Percentage calculations exclude missing data **

As the table indicates, transfer students are significantly older than native students. While 71% of the native students sampled were 24 and younger, only 32% of the transfer students were in this age range. A higher proportion of the transfer students (68%) were 25 or older, than were native students (29%).

For the purpose of this study, students were classified by their predominate attendance pattern. Using this method, 82% of the respondents were classified as full time students, 12% as part time students, and 6% of the respondents had "mixed" attendance patterns, neither predominately full time or part time.

Native students are more likely to be attending CSU full time, 91% compared with 74% of the transfer students, and transfer students are more likely to be attending part time, 20% compared with 2% of the native students.

Transfer students are more likely to have an A average the semester before graduation, 24% compared with 7% of the native students, and are less likely to have a C average, 16% compared with 26% of the native students. However, grades earned from transfer courses are not included in the overall GPA of the transfer student. If these grades were included, it is possible that the difference in GPA between native and transfer students might change in significance.

There is a significant difference between those who began as freshmen and those who began as transfer students, when the number of hours worked per week while attending classes is examined. Native students are more likely to be working from 1 to 19 hours a week (38%), compared with 24% of the transfer students. Transfer students are more likely to be working 35 hours or more (30%), compared with 12% of the native students. However, these variations may be related to the difference between those who attend part time and those who attend full time, as well as the age of the respondent.

Respondents categorized as part time students are much more likely to be working 35 hours a week or more, than respondents classified as full time students. Three quarters of the part time students (169), but only 13% (200) of the full time students work 35 hours a week or more. Full time students are more likely to be working less hours a week, but only 14% (227) of all full time students did not work at all while attending CSU.

Assessments of Academic Programs and Services at CSU

One of the primary goals of the questionnaire was to determine the respondents' opinion of many of the academic programs and services at CSU, and less specifically, the respondents' overall opinion of CSU.

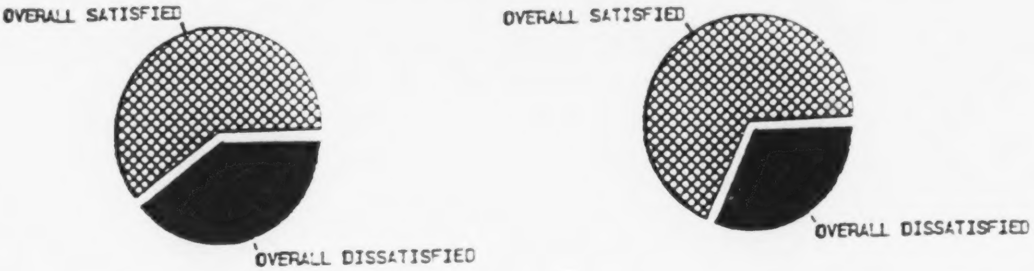
Most responses to these questions used a Likert scale ranging from very dissatisfied to very satisfied. In addition, the respondent had the option to choose does not apply as a response. However, for the purpose of analysis, cases with a does not apply response have been dropped from the calculation. In addition, the remaining responses have been combined into two categories, those who are either dissatisfied or very dissatisfied, and those who are either satisfied or very satisfied with a program. When responses did not follow this scale, an explanation of the scale is given.

As graph 1 indicates, there was a significant difference between respondents who began as freshmen and those who began as transfer students, when asked about their level of satisfaction or dissatisfaction with the academic advising program, registration process, and the availability of classes. In each case, transfer students were significantly more satisfied with the programs than were native students.

An equal percentage, 90% (861) of the native students and 90% (929) of the transfer students, were satisfied with their academic program. When asked about the quality of class instruction,

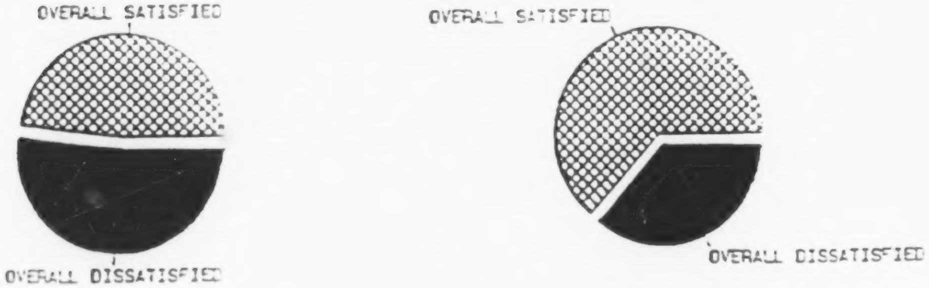
GRAPH 1

CONNECTICUT STATE UNIVERSITY
ASSESSMENT OF ACADEMIC ADVISING AT CSU
NATIVE VS. TRANSFER STUDENTS



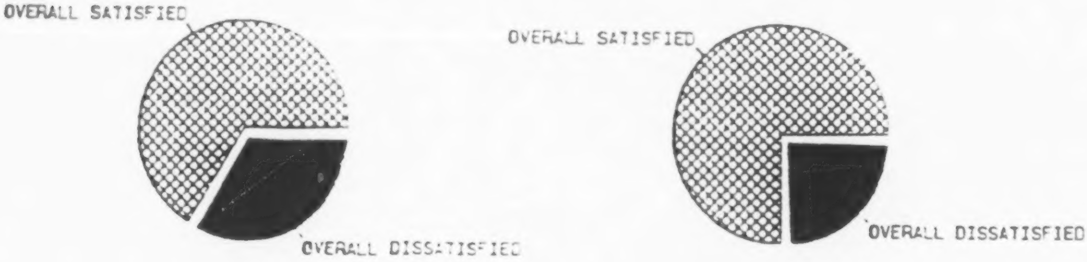
NATIVE STUDENTS TRANSFER STUDENTS

CONNECTICUT STATE UNIVERSITY
ASSESSMENT OF REGISTRATION PROCESS AT CSU
NATIVE VS. TRANSFER STUDENTS



NATIVE STUDENTS TRANSFER STUDENTS

CONNECTICUT STATE UNIVERSITY
ASSESSMENT OF AVAILABILITY OF CLASSES AT CSU
NATIVE VS. TRANSFER STUDENTS



NATIVE STUDENTS TRANSFER STUDENTS

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approximately 90% of both native and transfer students were satisfied with the quality. There was no significant difference between the two groups on their satisfaction with either their academic program or the quality of class instruction.

There was no significant difference between native and transfer students when asked to rate CSU on a Likert scale ranging from very underrated to very overrated. In this case, two categories were created, responses which indicated that CSU was either very or moderately underrated, and responses which indicated that CSU was either very or moderately overrated. Responses which indicated that CSU was neither overrated or underrated (neutral) were dropped from the calculation. Using this method, 86% (471) of the native students and 88% (462) of the transfer students felt CSU was underrated.

There was also no significant difference between native and transfer students when asked to rate CSU as a whole. Of the total respondents, 93% (887) of the native students, and 92% (941) of the transfer students surveyed were either satisfied or very satisfied with CSU as a whole.

Perhaps the most indicative of the student's overall experience at CSU, was the question which asked whether the student would recommend CSU to a friend. There were only two response choices for this question, yes or no. About 92% of the entire sample responded that they would. There was no significant difference between the responses of native and transfer students.

Assessments of CSU's Influence on Skills and Abilities

To examine the respondent's assessment of CSU's influence on various skills and abilities, a scale with the response options of not at all, a little, some, and greatly enhanced was employed.

When asked how the student's experience at CSU had influenced several skills, such as the ability to think analytically, write effectively, and communicate well orally, a significantly larger number of native students felt their experience at CSU had greatly enhanced these abilities, and a larger number of transfer students felt that their experience at CSU had somewhat enhanced these abilities.

The same was true when asked how CSU influenced skills such as the ability to relate well to different people, lead and supervise tasks, and to function effectively as a member of a team.

In fact, the pattern of responses to all of these questions was remarkably stable. Consistently, the number of native students who felt that CSU had greatly enhanced the previously mentioned skills was an average of 10% higher than the number of transfer students. The number of transfer students who felt that CSU had enhanced these skills somewhat, averaged about 5% higher than the number of native students.

A likely explanation for this pattern is that transfer students may feel that institutions they have attended previously have influenced them, and CSU has not been the primary influence. Thus, although the transfer student's experience at CSU has enhanced these skills and abilities, it may not have influenced them greatly, whereas the student that began as a freshmen would be more likely to credit CSU with greatly enhancing these skills and abilities.

However, between 65% and 90% of the total sample of students felt that CSU has had a positive influence, whatever the degree of influence may be, on these skills and abilities.

Methods of Financing Education

There were multiple response possibilities to the question which inquired about the students' methods of financing his/her education. The student had the option to check as many methods of payment as applied. Therefore, because a student checked one method of payment does not mean that was the only method of payment the student utilized.

Graph 2 compares native and transfer students on the methods of payment utilized in financing the student's undergraduate education at CSU. Graph 3 compares native and transfer students on the types of financial aid utilized.

Although transfer students were not significantly more likely to check that they had paid for some or all of their education with their own earnings, 66% compared with 63% of the native students, they were significantly more likely to indicate that they paid for their education solely with their own earnings (21%) than were native students (13%). Evidently, transfer students are more likely to be paying for college solely with their own earnings than are native students.

Respondents who began as freshmen were much more likely to check parent support as one of their methods of payment (67%), compared with 37% of those who began as transfer students. Of the respondents who identified themselves as transfer students, 15% (159) checked parent support and no other method of payment, compared with 25% (245) of the respondents who identified themselves as native students. Apparently, transfer students are less likely to receive parental support to pay for some or all of their education than are native students.

Native students are more likely to have received private or university scholarships than are transfer students. Transfer students are more likely to indicate spouse support, employer reimbursement, and veteran's benefits as methods of payment than are native students.

Of the total sample, 29% of the native students and 24% of the transfer students named financial aid as a method of payment. Native students were significantly more likely to check financial aid as a method of payment than were native students.

The only significant difference between respondents who began as freshmen and those who began as transfer students in the types of financial aid, was between those in a work study program and those who received a student loan. Native students were more likely to name both of these forms of financial aid as methods of payment, than were transfer students.

Of the total respondents, the three methods of payment which were checked most often include own earnings (64%, n=1286)), parent support (50%, n=1020), and financial aid (26%, n=519). No more than 10% of the total respondents checked each of the additional categories of payment. The most often checked form of financial aid was student loans (23% n=425), and the second most often checked was Pell grants (14% n=273).

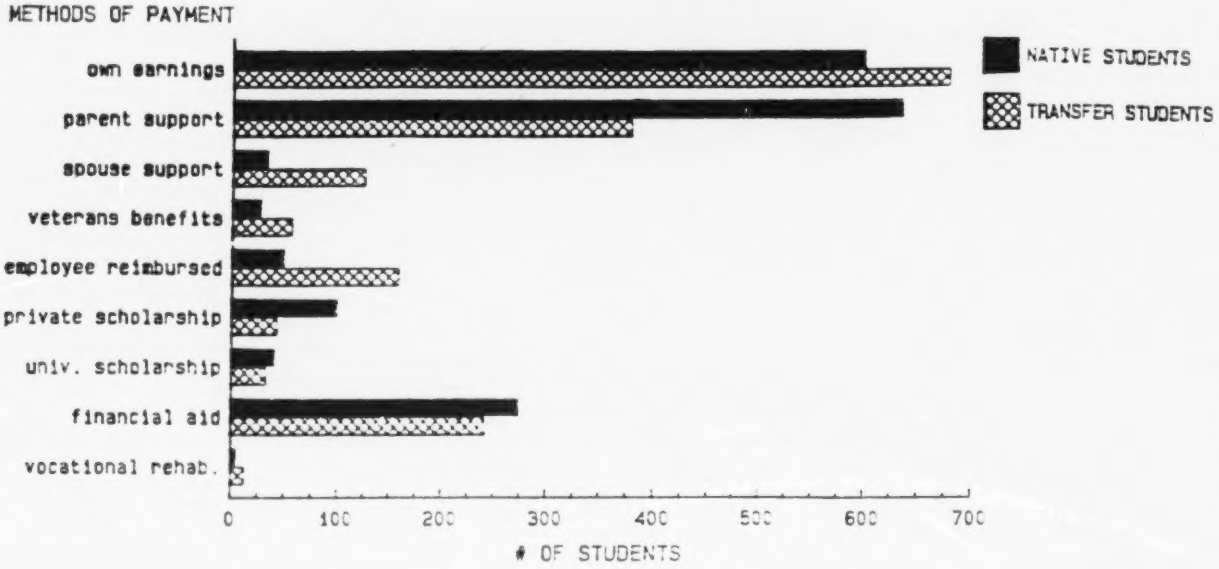
Present Employment Status

There is no significant difference between the employment status of native and transfer students. A little more than 70% of both groups indicated that they were employed full time. Another 15% indicated that they were employed part time. About 6% of the entire group were not employed but were seeking employment, and about 2% were not employed and were not seeking employment.

Graph 4 illustrates the similarities and differences between native and transfer students on the year the student began his/her present employment, as well as the student's present salary.

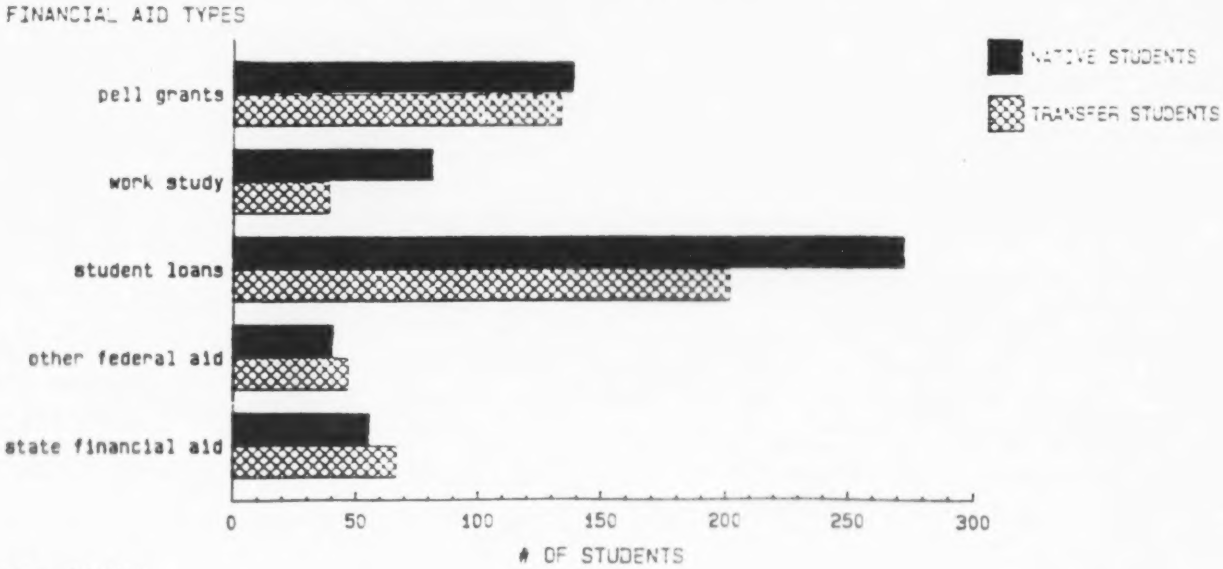
GRAPH 2

CONNECTICUT STATE UNIVERSITY
PAYMENT OF UNDERGRADUATE EDUCATION
NATIVE VS. TRANSFER STUDENTS



GRAPH 3

CONNECTICUT STATE UNIVERSITY
TYPES OF FINANCIAL AID
NATIVE VS. TRANSFER STUDENTS



Date: 5/22/92
Prepared by Dawne Vogt
Source: Survey of the Class of 1990

As the graph indicates, transfer students are significantly more likely to have begun their present employment before completing their degree at CSU, and thus, to have been at their present employment longer than native students. While 36% of the transfer students began their present employment before 1990, 22% of the native students began their present employment during the same time.

Perhaps this would partially explain why the salary of the transfer student tends to be significantly higher than that of the native student. The longer one stays in the same job, the more likely he/she is to receive an increase in salary.

In fact, 26% (234) of the respondents who identified themselves as transfer students were making a salary of $30,000 or more at the time of the survey, compared with 13% (112) of those who identified themselves as native students. Accordingly, a significantly higher proportion of native students were making a salary below $29,999 than were transfer students. Graph 7 illustrates the significant difference in earnings between native and transfer students.

Turning to employment satisfaction, 52% (949) of the total respondents were either satisfied or very satisfied with their present employment. There were no significant differences between native and transfer students on this measurement.

There was also no significant difference between native and transfer students when asked whether they agree or disagree that their CSU degree helped them to get their job. Since this question is meaningless to the students who had begun their present employment before they received their degree, their responses have been eliminated from the analysis. Of those students who began their present employment in 1990 or 1991, 76% (949) agreed or strongly agreed with the statement, 16% (195) disagreed or strongly disagreed with the statement, and 8% (99) responded "does not apply" to the question.

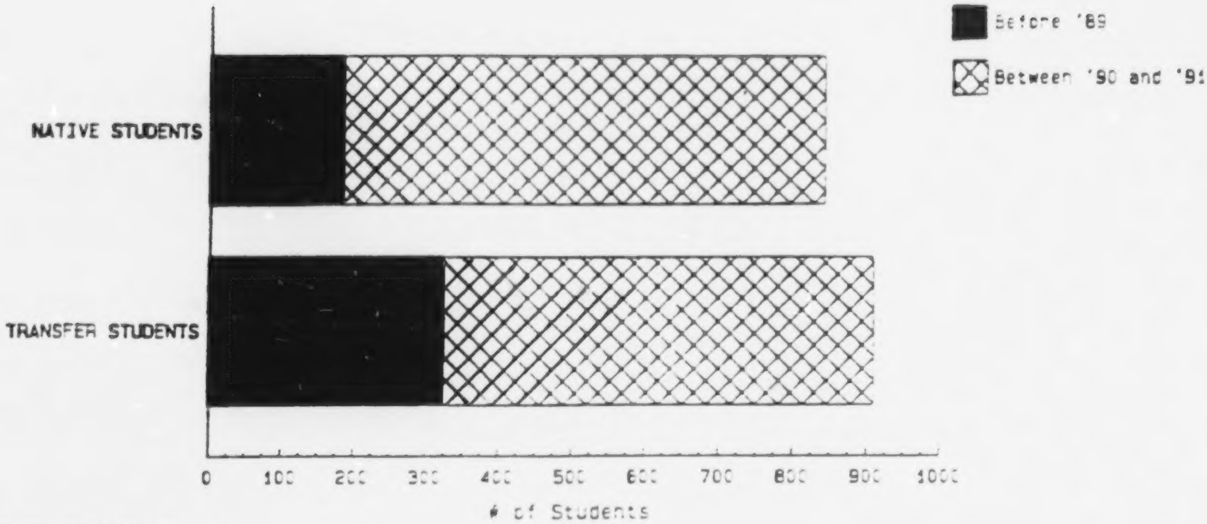
There was no significant difference between native and transfer students when asked whether they agree or disagree that their CSU degree helped them to get a promotion. In this case, the question is meaningless to the students who had begun their present employment after they received their degrees, and their responses have been eliminated from the analysis. Of the students who had begun their present employment before 1990, 25% (n=131) agreed or strongly agreed with the statement, 28% (146) disagreed or strongly disagreed with the statement, and 47% (245) responded 'does not apply' to the question.

About 68% of the total respondents agreed or strongly agreed that their major was good preparation for their present employment. However, native students were more likely to disagree with the statement that their education was used in their current job. Of those who began as freshmen, 29% (248) disagreed or strongly disagreed with this statement, and of those who began as transfer students, 23% (214) disagreed or strongly disagreed with the statement. One possible explanation for this, is that often transfer students may already be pursuing a career, and wish to get a degree in that field. Therefore, their education will undoubtedly be used in their current employment. On the other hand, native students often get a degree in one field and later discover that they would rather work in another field. As a result, they may not feel that they use their education in their employment.

Of the total sample, about 27% (510) are presently pursuing further education. About 74% (379) of this group are pursuing further education towards a degree. There is no significant difference between the proportion of native and transfer students pursuing further education.

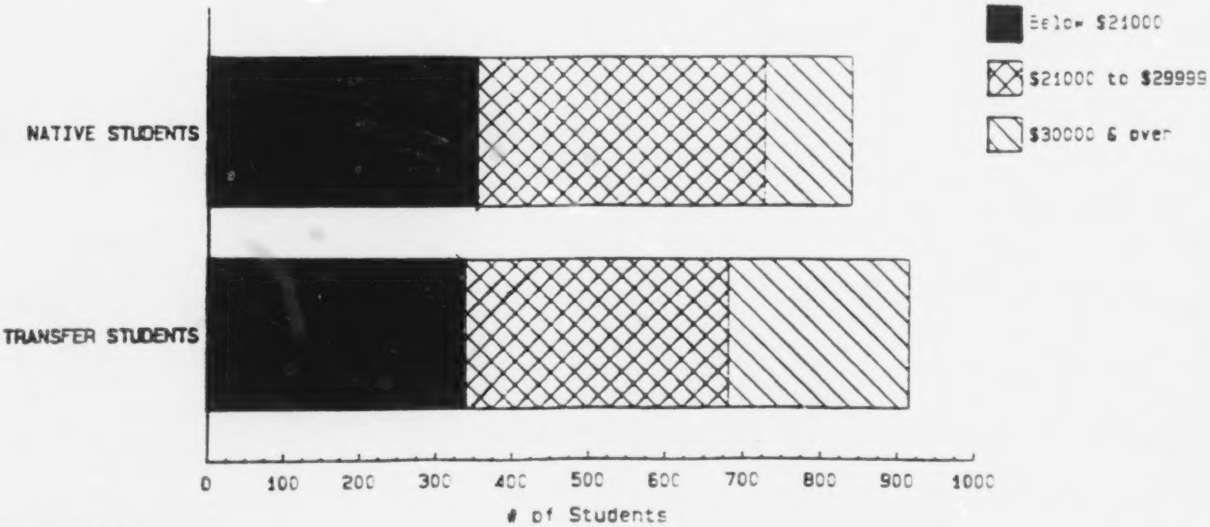
GRAPH 4

CONNECTICUT STATE UNIVERSITY
YEAR BEGAN PRESENT EMPLOYMENT
NATIVE VS. TRANSFER STUDENTS



Date: 5/26/92
Prepared by Dawne Vogt
Source: Survey of the Class of 1990

CONNECTICUT STATE UNIVERSITY
PRESENT SALARY
NATIVE VS. TRANSFER STUDENTS



Date: 5/26/92
Prepared by Dawne Vogt
Source: Survey of the Class of 1990

In Conclusion

This study shows several significant differences and similarities between native and transfer students at CSU. The two groups have been described and compared on general characteristics, methods of financing education, assessments of programs and services at CSU, assessments of CSU's influence on skills and abilities, and current employment status.

It is important to note that this survey only measures the responses of students who have successfully completed their undergraduate degrees. This report can not answer questions about the satisfaction of those students who begin at the university and for one reason or another do not complete their degree. Therefore, the results of this survey can not be generalized to the population of students at CSU, but to the population of graduates from CSU.

In addition, the data used to generate this report can not answer questions about the number of credits accepted and rejected in the transfer process, or the number of semesters the transfer student has attended previous institutions. Therefore, a comparative analysis of the native and transfer student's length of time until graduation is not possible using this data.

However, this study does answer questions about the student's assessment of the university, and the university's influence on the student. Results indicate that transfer students are just as satisfied, if not more satisfied, with their overall experiences at CSU, than those who began at CSU as freshmen. The findings of this study are very significant, in light of concern that transfer students may be less satisfied with their experiences upon transferring to a new institution than are native students. These findings suggest that students who transfer into CSU and receive their degree from the institution are pleased with their experiences here.

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School Visits - Still an Effective Marketing Tool?

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Abstract

Has mass marketing made the high school visit unimportant as a recruitment tool? Or does the personal quality of the high school visit still have unique advantages? Correlation analyses of recent Franklin Pierce data, as well as theoretical considerations form the basis of the discussion of this issue.

Introduction

The purpose of this paper is to develop hypotheses about the validity of the school visit as a marketing tool. A school visit means going to a high school and meeting with a guidance counselor and available students. This definition includes, as well, the "mini-fair", a larger gathering of students and counselors, which also provides the opportunity to speak directly to counselors and students. Large college fairs, where significant personal contact and exchange of information are not possible, are not included in the definition.

In the past twenty years, the school visit has been overshadowed as an admissions recruitment tool by mass marketing techniques - mass mailings of literature, large college fairs and promotional videotapes. Mass marketing in admissions mimics mass marketing in consumer products and services and in politics. There is no effort to personalize the contact between the student and the representative of the college either directly or through the guidance counselor.

Literature is regarded as the key factor by many admissions offices. They believe that the width of the admissions funnel - from inquiries to applications to deposits to matriculants - can be maximized by getting as much compelling literature into the hands of as many potential new students as possible. Although this approach seems to have merit, there is growing evidence that the increasing volume of literature is beginning to overwhelm prospective students and their parents and, therefore, that the substitution of booklets for face-to-face discussions is reaching a point of diminishing returns. One need only observe the armfuls of viewbooks that are carried off from college fairs to surmise that this is true.

At Franklin Pierce, the expansion of mass marketing was associated with a nearly 40% increase in enrollment during the five-year period 1986-90. However, also during this period, a computer model for prioritizing and scheduling school visits was fully implemented at the college (see the author's paper, "A Simple Computer Model for Prioritizing and Scheduling School Visits," also presented at the NEAIR 1991 Annual Conference). A third factor affecting this enrollment growth was feedback from college matriculants to students at their former high schools.

This paper, then, seeks to lay the basis for a comparison of school visits with mass marketing techniques and college student feedback as admissions marketing factors.

School Visits vs. Mass Marketing: A Qualitative Analysis

Mass marketing has the advantage of cost-effectiveness and reach, but necessarily lacks depth or intimacy. However, when college representatives speak directly to a guidance counselor and students during a high school visit, they have the opportunity (1) to answer specific questions about the college which are not answered in catalogs, viewbooks or videos; (2) to personally create a favorable impression about their college community; and (3) to initiate or enhance an information exchange with the counselor which can increase the number of applications to the representative's college.

(1) Answers to Specific Questions

These can enable the counselor and students to select colleges better. For example, with a moderately selective college like Franklin Pierce, there is always the question of adequacy of support for a student with a learning disability. In a personal conversation, the nuances of such a student's needs can be better discussed and a representative is better able to determine whether the college can meet his needs. Is the student basically "mainstreamed" and therefore only in need of support for a regular curriculum? Or is the student in need of specialized support and individually tailored programs supported by regular evaluation and diagnosis? In the former case, a larger number of schools, including Franklin Pierce, can provide adequate support. More specialized kinds of support have fewer providers. Another example: much more detailed information on a major, such as the number and quality of the students in it, can be conveyed in a personal conversation with a representative.

2) A Favorable Impression

Aside from specific information, the school visit also provides an opportunity for the college representative to create a favorable personal impression of the college community he represents. However, it should be noted that a negative impression can also be created.

(3) A Residual Relationship

Another possible benefit from a school visit is a working relationship with a counselor which will facilitate applications to the representative's college. How influential the counselor's recommendation of a particular college will be depends, of course, on the respect accorded the counselor by students at the high school. This, in turn, depends on the counselor's ability, accomplishments and interest in his students. It also depends on whether his principal gives him adequate time and facilities to perform his task well.

School Visits vs. College Student Feedback: A Quantitative Analysis

The effectiveness of school visits as a recruitment tool can also be evaluated in comparison to feedback from college matriculants to students at their former high schools. Clearly, such feedback is a powerful factor, representing actual use of a service in contrast to the mere promotion constituted by the school visit. One would suspect that feedback from college freshmen would be a particularly important element because of their closer contact with current seniors at their former high schools.

As determined by simple regression analyses, the correlation between college student feedback and matriculation at Franklin Pierce (coefficient of determination = .58) is indeed substantially greater than that between college visits and matriculation at Franklin Pierce (coefficient of determination = .33). These analyses were based on recent five-year data cohorts from 1931 high schools in the main Franklin Pierce recruitment area (New England, the New York City metropolitan area and the rest of New Jersey). To represent the delay in its effect, the independent variable in each analysis (sum of visits or sum of matriculated students, (representing college feedback)) was lagged by a year. (See Figures 1 and 2.)

A third regression was made from the same data base, using applications to Franklin Pierce as the independent variable and matriculation as the dependent variable. As would be expected, this analysis produced the highest correlation (coefficient of determination = .84). (See Figure 3.)

Figure 1

Scattergram: Visits, 1985-89 vs. Students, 1986-90

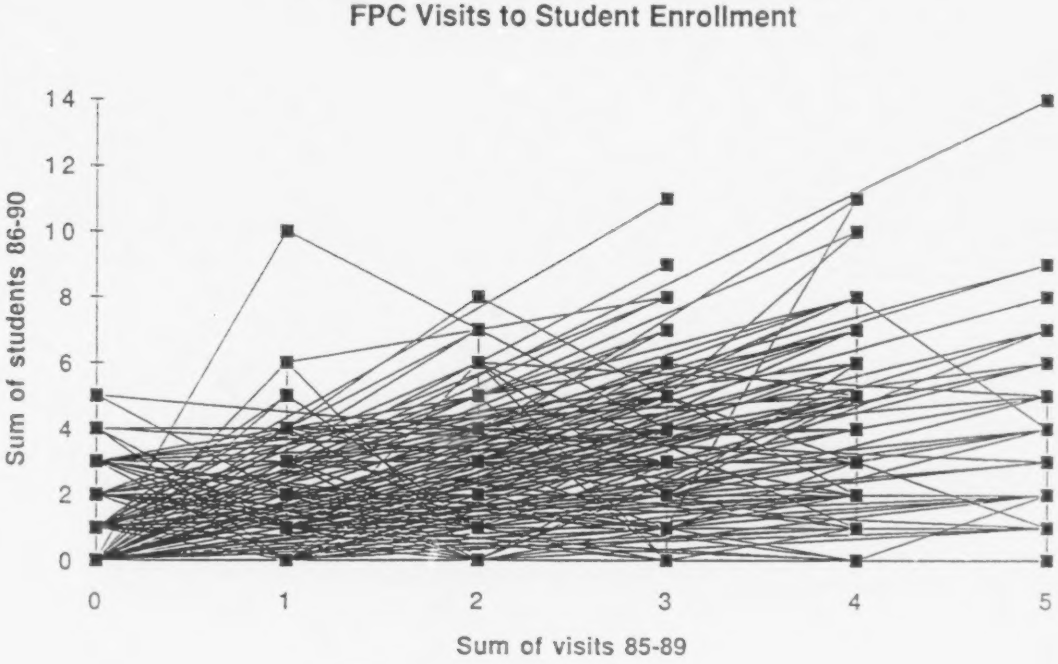

Figure 2

Scattergram: Students, 1985-89 vs. Students, 1986-90

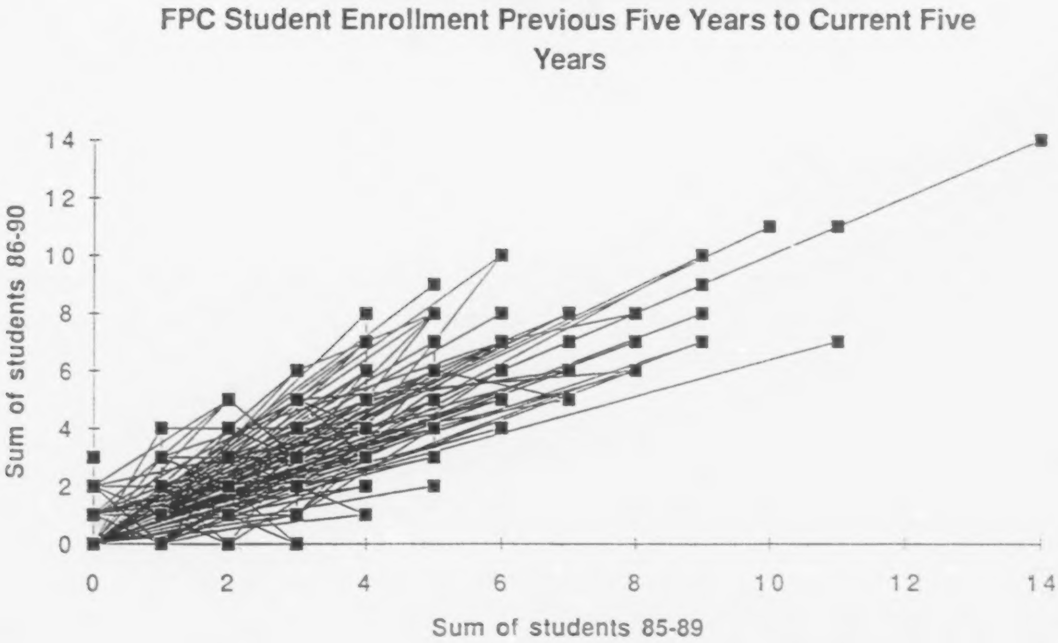

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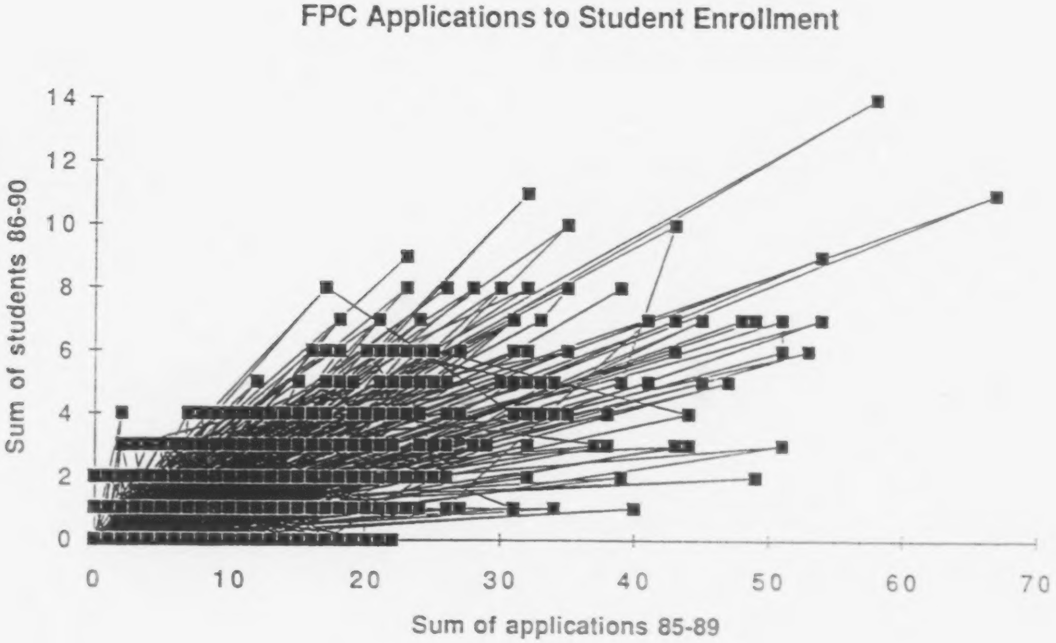
Figure 3

Scattergram: Applications, 1985-89 vs. Students, 1986-89



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Conclusions

A hypothetical case can be made that school visits are still an effective marketing tool and should be retained in an admissions department's marketing mix. While mass marketing techniques are more cost-effective and have greatly expanded the scope of college promotion, these techniques lack the personal quality and depth of the school visit. Furthermore, it appears that due to increased volume these techniques may be reaching a point of diminishing returns.

A comparison between college student feedback and school visits as recruitment factors also suggests that school visits retain their effectiveness as a marketing tool. While the "user" variable of college student feedback appears to be more important, school visits seem to be a significant factor, as well.

In a future paper, a more comprehensive theoretical model will be constructed to test these and other hypotheses about the admissions marketing mix.

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